EPA PROPOSED RULEMAKING ON CHLOROFLUOROCARBONS (CFCs) AND ITS IMPACT ON SMALL BUSINESS

HEARING

BEFORE THE

SUBCOMMITTEE ON ANTITRUST AND RESTRAINT OF TRADE ACTIVITIES AFFECTING SMALL BUSINESS

OF THE

COMMITTEE ON SMALL BUSINESS HOUSE OF REPRESENTATIVES

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EPA PROPOSED RULEMAKING ON CHLOROFLUOROCARBONS [CFC's] AND ITS IMPACT ON SMALL BUSINESS

WEDNESDAY, JULY 15, 1981

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ANTITRUST AND RESTRAINT OF
TRADE ACTIVITIES AFFECTING SMALL BUSINESS,
COMMITTEE ON SMALL BUSINESS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2359-A, Rayburn House Office Building, Hon. Thomas A. Luken (chairman of the subcommittee) presiding.

OPENING STATEMENT OF CHAIRMAN LUKEN

Mr. LUKEN. Thank you for coming to this hearing of the Committee on Small Business, Subcommittee on Antitrust and Restraint of Trade Activities Affecting Small Business. We are looking today particularly at how the actions or the potential actions of the EPA would affect the small business community in this country.

In the proposed action by the Environmental Protection Agency there is a proposed regulation which would limit the production of chlorofluorocarbons—which we will call CFC's because some of us can't say chlorofluorocarbons too well or at least too often—and the impact of these proposed regulations on small business.

The CFC's are synthetic compounds that were developed in the 1930's and have wide application in refrigerants and in insulation, and they are extremely important to the many industries in this country: Air-conditioning, automobiles, food, generally, just to name a few.

Based on the theory that CFC's release into the atmosphere, would make their way to the stratosphere and cause a reduction in the Earth's ozone layer which in turn could have detrimental health and environmental consequences, EPA in October 1980, issued an "Advance Notice of Proposed Rulemaking" on restricting CFC production.

Although today's hearing addresses EPA's current "Advance Notice of Proposed Rulemaking," the issue goes further, at least as far as the chairman of this subcommittee is concerned. That is not only as to this proposed rulemaking and what happens to it, but what standards we may want to recommend to the Congress as far as the standards that EPA must utilize, whether it can propose and put into effect a rulemaking which would put a cap on the production of a vital product for major industries in this country on the

basis of mere suspicion or upon just what standards would be required.

Those are some of the considerations and the ultimate issues as far as I am concerned as to what we would want to be looking at in the field of proposed legislation or in looking at the EPA regulations.

That concludes what brief comments that I have at this time.

Mr. Williams?

Mr. WILLIAMS. Mr. Chairman, I want to simply compliment you and the staff of the committee for the scheduling of these hearings. I might admit from the outset that representing an area known as Youngstown, Ohio, I am very familiar with EPA and the protection they give us and I hope that is clear from the outset.

I am anxiously awaiting the testimony from the small business community dealing with this particular problem and hope that as a result of these hearings we can once again point out that maybe we are overprotected a little bit.

Thank you.

Mr. LUKEN. Mr. Bedell, the gentleman from Iowa?

Mr. BEDELL. Mr. Chairman, there are many in this room who already are aware of the role you have played in causing a critical examination of the Environmental Protection Agency's proposal for regulations concerning chlorofluorocarbons. However, I want to take note of your activity on this issue for the record.

Now, it seems to me that the debate on the CFC's can be divided into two separate issues. One is whether they actually are harmful to the environment. The other is, if they are indeed harmful to the environment, how should their production and use be best regulated.

I do not believe this subcommittee ought to sit in judgment on the first question, that of the actual environmental impact of the CFC's. In fact, the chairman has legislation on that point pending before another committee at this time.

I do feel that it is entirely proper for us to review very carefully the regulatory proposals that were offered for comment last October by the Environmental Protection Agency. Assuming that regulation of CFC's is necessary and warranted, I still am very troubled by those proposed regulations.

My initial reaction to them is that they appear to put small businesses at a severe competitive disadvantage as compared to their larger competitors who manufacture and use those compounds.

One of the most important functions of the Small Business Committee is to assure that the Nation's smaller businesses are treated fairly and equitably by our Government. The EPA's proposed regulations regarding CFC's seem to run counter to that mandate.

So, once again, I commend the chairman for holding this hearing and focusing public attention on this particular matter.

Mr. LUKEN. Thank you, Mr. Bedell. You make an important distinction and we will try to keep that in mind as we move along. I certainly agree that this subcommittee should at least accentuate the considerations that you have advanced and we will try to do that.

PANEL CONSISTING OF JON M. PIERCE, P. W. RAVANESI, TIMOTHY J. FAHRNEY, AND JOHN H. REILLY

Mr. LUKEN. We begin with a panel this morning which we have dubbed the Climate Control Panel. We have Mr. Jon Pierce, an air-conditioning contractor from Fort Worth, Tex.; Mr. P. W. Ravanesi, who is an air-conditioner wholesaler from Melrose Park, Ill.; Mr. Timothy Fahrney, an air-conditioning contractor from Canal Fulton, Ohio; and Mr. John Reilly, who is an air-conditioning wholesaler from Philadelphia, Pa.

Do you want to go in any particular order, gentlemen?

Mr. Pierce? All right. Do we have your statement, Mr. Pierce?

Mr. PIERCE. Yes, sir, you do.

Mr. LUKEN. Without objection, your statement, which has been submitted to the committee, will be received by unanimous consent. You may proceed.

TESTIMONY OF JON PIERCE, AIR-CONDITIONING CONTRACTOR, PIERCE, INC., FORT WORTH, TEX.

Mr. PIERCE. Good morning. Mr. Chairman, distinguished members of this committee, I will start off by saying it is terrific to be here to discuss with you an opportunity that we have in our industry. You, as a user, along with many other Americans, my company, and my industry have a concern, that is in regard to the EPA's potential regulation of CFC's, Mr. Chairman, as you have indicated we will call it today.

The businesses that we are in, air-conditioning contracting, rely very heavily on the availability of the CFC's that are produced today, and we appreciate you taking the time to look into this question.

My name is Jon Pierce and I am president of Jon Pierce, Inc., a holding company headquartered in Fort Worth, Tex. My firm owns several firms related to the construction industry which are involved in construction management, in general contracting, in specialty contracting such as electrical, mechanical, and air-conditioning contracting.

Approximately 1 year ago concerned businesses, both large and small, organized the Alliance for a Responsible CFC Policy, a broad-based coalition of producers and users of CFC's, the vast majority of whom are small businesses.

To the CFC community this was an extremely significant action. The purpose of the Alliance for a Responsible CFC Policy is to resist what we consider to be an unwarranted intention of the EPA to regulate nonaerosol uses of CFC's.

I serve as a member of the board of directors of the CFC alliance. I am also a past president of the Air-Conditioning Contractors of America and chairman of that association's CFC task force.

I appear here today on behalf of my air-conditioning company, Pierce Air-Conditioning. Thirteen years ago I founded Pierce Air-Conditioning and any other businesses I have or successes we have enjoyed, any jobs that we have been able to provide for employees we have, has been a result of that company.

Pierce Air-Conditioning is a small business employing some 25 men and women in both the construction and service markets of air-conditioning. The annual sales volume of this company is ap-

proximately $2 million, of which 25 percent would be service related.

In 1981 Pierce Air-Conditioning will need approximately 13,000 pounds of CFC's, the only chemical available to act as a refrigerant in the air-conditioning and refrigeration systems that my company installs and services.

Among the service accounts that contribute to the profitability and the viability of my company, are supermarkets, medical centers, hospitals, factories, office buildings, and computer room installations. All of these accounts absolutely require careful and continuous maintenance of climate control at specific temperatures. If they cannot maintain such temperatures on a continuous basis negative economic consequences to these businesses could be staggering. Accordingly they seek a service contractor who can absolutely guarantee immediate attention should a climate control problem develop. Thus, within reason, reliability becomes a more important factor than cost.

Under the proposal advanced by the EPA and its ANPR as published in the Federal Register of November 7, 1980, I am convinced that the reliability of the small service contractor would be subject to serious question.

Although people at the EPA will probably take exception to this, it is my opinion that the EPA has pursued this issue without the slightest sensitivity or regard to the impact their proposed regulations will have on the small business community.

Although it is not legally required to be done at the ANPR stage of rulemaking, I find it a major concern that EPA has not formally addressed itself to the small business economic impact during the years of study that have preceded today's hearings.

Under the EPA's proposal, production of CFC's would be capped at production levels for a base year. Prominently mentioned thus far is the year 1979. After creating this artificial shortage, EPA reasons that the various users of CFC's will compete with each other for the access to available supply.

As the competition heats up and the price for access to and use of CFC's escalates, EPA predicts that nonessential applications of CFC's will be abandoned, therefore allowing EPA to regulate further reductions in the production levels to some 50 percent to 70 percent of the 1979 production year.

That means really that we would lose roughly two-thirds of the availability of our CFC's which we have today.

EPA claims this approach would allow the marketplace to allocate supplies of CFC's at whatever price the market would bear. However, I must take strong exception to both the premise and the line of reasoning.

Once the regulatory process has skewed the market off balance with an artificial shortage, equitable equilibrium cannot be regained as long as the regulatory process continued to inhibit the mechanism of a free market at its source.

Furthermore I submit in the short range and possibly longer, EPA's distribution model is clearly in error. EPA's assumption that nonessential or noncompetitive applications of CFC's will be abandoned does not address the very simple economic facts of life.

The substitution of technology for industrial processes is expensive and it does not happen overnight. Thus, for the foreseeable future the only abandonment of CFC's use will be from those firms that are financially or physically unable to obtain it. That, unfortunately, appears to be the small business community.

Small firms with relatively small financial capacities or capabilities will be at the competitive disadvantage relative to larger firms that have larger financial capabilities as a scramble for the restricted amount of CFC's available.

Pierce Air-Conditioning will not only have to compete with 50,000 other independent air-conditioning firms in the United States but will also compete against many Fortune 500 companies for that product.

Furthermore, Pierce Air-Conditioning will have to compete for access to CFC's against the other users in various industries such as foam blowers, liquid fast freezers of food, sterilant users, solvent users, et cetera.

Mr. Chairman, under these circumstances, I am afraid that I would not be in a position to guarantee reliable service to my supermarket, hospital, computer customers. The very real fact of the matter is that without access to CFC's I could not adequately or reliably maintain the climate control systems of any of my customers.

At this point my customers would have absolutely no choice but to give their business to a company that could guarantee adequate supplies of CFC's. They would give their business to those firms, most likely the large, financially more sound firms that can guarantee reliable service.

When that day comes, Mr. Chairman, Pierce Air-Conditioning will have to close its doors. I fear that the EPA's proposal at this point in time and the ANPR is bringing that closer to a reality.

So we appreciate the opportunity to present this testimony to you, sir.

Mr. LUKEN. We have been joined by Congressman Daub and by Congressman Gonzalez. Welcome.

Do you have any statement, Congressman Gonzalez?

Mr. GONZALEZ. I really want to thank the chairman for his thoughtfulness because it anticipates what I was about to interrupt to say, that again I have a conflict. I am chairing the Subcommittee on Housing and we have hearings in about 6 minutes and I have to be present. Therefore, there is a conflict.

However, it is my hope that I can return before you have finished the hearings or if you have resumption of the hearings after the noon hour. I don't know if that is your intention or not.

Mr. LUKEN. Well, we hope to conclude this morning.

Mr. GONZALEZ. I see.

Mr. LUKEN. Thank you. We appreciate it.

Mr. GONZALEZ. I want to thank you for having these hearings and for the opportunity to be here and I regret very much that I have this conflict.

Mr. LUKEN. Congressman Daub?

Mr. DAUB. Mr. Chairman, thank you and for just a moment, I want to commend you and the ranking member, Mr. Williams, for the leadership you have shown in assembling the panels. I have

been a freshman Member of this Congress now for just 5 months and want you to know that I am really impressed by the gathering of talent and the preparation of materials in advance for us to be able to examine this issue.

Today's hearings are an important instrument I think to determine the efficacy and the impact of a regulatory limitation on the manufacturing of CFC's and it is my hope that when we are finished here today we are going to be able to produce some valid assistance to the EPA and to the Congress that will enhance our understanding in this area.

I intend to review carefully the analysis presented by this forum and to make it available to individuals in my district—I think this is important—whose business may be affected by the contemplative rulemaking and encourage them to contact the EPA and contribute to this process.

So, again I want to thank not only the leadership in the subcommittee but, as well, each of you for participating today in making your contributions that I think are going to really set this situation in a perspective that will conclude the argument once and for all.

Mr. LUKEN. Congressman Dreier?

Mr. DREIER. Thank you, Mr. Chairman. I am just visiting. I am not a member of the subcommittee, but I just wanted to come by. I have a personal interest in this issue. I just want to observe for a few minutes.

Mr. LUKEN. Thank you. We appreciate having you.

All right. Mr. Ravanesi? We have your statement——

Mr. PIERCE. Mr. Chairman, could we have Mr. Fahrney go next?

Mr. LUKEN. All right. Mr. Fahrney.

Mr. Fahrney, we have your statement. Without objection, by unanimous consent it will be received into the record.

TESTIMONY OF TIMOTHY J. FAHRNEY, AIR-CONDITIONING CONTRACTOR, C. R. KURTZ, INC., CANAL FULTON, OHIO

Mr. FAHRNEY. Mr. Chairman, members of the committee, I thank you for the opportunity to appear before you this morning. My name is Tim Fahrney and I am president of C. R. Kurtz, Inc., an air-conditioning contractor located in northeastern Ohio, Canal Fulton, specifically.

We are involved in the residential and commercial part of the industry.

C. R. Kurtz is a family-owned business having been founded approximately 50 years ago by my grandfather. Over the years we have been very successful, been able to grow to an anticipated sales volume of this annual year of about $4 million; we have approximately 60 employees.

Our various divisions perform activities in new construction, service, maintenance, and total mechanical energy management systems.

The service division of our company is probably the most important part of our operation. It accounts for only about 20 percent of our sales dollars, but it generates work in the replacement/retrofit market and it generates the vast majority of leads for us to use in our energy management division which is basically involved in conserving our natural resources.

Among our customers for service work are the supermarkets, medical centers, and computer rooms that were previously mentioned; along with those are food storage centers, food processors, meatpackers, et cetera. We also do a large amount of residential and apartment service work.

To adequately serve these customers we need approximately 6,000 pounds of CFC's per year. At the present time there are a number of excellent reasons why my company uses CFC's. Given any potential alternatives, CFC's are the safest, most environmentally acceptable, and most energy-efficient chemical available to act as a refrigerant in air-conditioning/refrigeration systems.

Further, today's air-conditioning and refrigeration systems are specifically designed and manufactured to use CFC's; thus, suitable alternatives are not available.

My company's daily use of CFC's is not something that can be accurately anticipated. Each serviceman will typically possess a 30-pound pressurized cylinder of CFC's to use for recharging systems on a daily basis. If an unanticipated large quantity is needed, which would be the result of a major breakdown in a large piece of equipment, the serviceman would have to visit a local warehouse and the reason behind that is that it costs about $30 per hour to keep a service truck on the road. We obviously cannot afford, under the economic climate, to have a serviceman return to home base. We service an area of about a 50-mile radius and, as you can well imagine, that would be very costly. Therefore, CFC's must be available on an immediately and timely basis.

Further, it is economically impossible to store the quantities of CFC's in the shop. Space considerations aside, it costs approximately $75 per pound of CFC's that we use. It is bad business to use necessary working capital to store the CFC's for lengthy periods of time.

Cylinders of over 30 pounds are not considered disposable. The supply house would require a deposit on these larger cylinders which is a further drain on working capital.

Normally on the larger jobs we can anticipate this usage, we can pick a cylinder up in the morning, use it during the day, and have it back in the evening and the deposit is not a problem. But that is not always the case.

As I understand the EPA's advance notice of proposed rulemaking as published in the Federal Register of October 7, 1980, our ability to obtain CFC's in the present manner will be impossible.

EPA proposes that I bid against multinational conglomerates and all other users, both large and small, for the right to obtain CFC's. What it amounts to in my opinion is public auction.

If I am successful, which is very much in doubt, I am then restricted to the amount of CFC's as represented by the number of permit pounds I am able to obtain.

If my company grows, which I hope that it does, and, along with that, my need for CFC's will increase, I am now forced into a white market where I must attempt to purchase additional permit pounds to meet my needs.

Certainly any successful small businessman will be competing with me to obtain the same additional rights.

I suspect that the only source available will be from larger companies if indeed they are not themselves seeking additional permits to meet their needs.

Add to that the increased price of CFC's themselves that will result from the artificial shortage created by EPA's production cap and the economic burdens on existing small businesses could be almost fatal just to stay even.

Expansion and growth will be extremely difficult if not impossible.

And, finally, the ability of new firms to be started that must use CFC's is virtually precluded. Competition in the marketplace will of necessity be reduced.

This is more economic hardship than I believe my company can withstand. Certainly it will be beyond the capabilities of the average air-conditioning contractor who has an annual sales volume of only one-half of a million dollars.

In short, Mr. Chairman, I submit that the EPA's proposal is inequitable, unworkable, and unnecessary.

Thank you very much.

Mr. LUKEN. Thank you, Mr. Fahrney.

Mr. John Reilly.

TESTIMONY OF JOHN H. REILLY, AIR-CONDITIONING WHOLESALER, UNITED REFRIGERATION, INC., PHILADELPHIA, PA.

Mr. REILLY. Thank you, Mr. Chairman, Members of Congress.

Mr. LUKEN. I believe we have your statement and, without objection, it will be received into the record. Proceed.

Mr. REILLY. Thank you.

My name is John Reilly, executive vice president of United Refrigeration, a small refrigeration and air-conditioning wholesaler in Philadelphia. I thank you for the opportunity to appear here.

I would like to relate to you what will be the devastating effect on small business as a result of the EPA's irresponsible attempt to regulate CFC's or refrigerants.

My company, as a distributor of CFC's and other items relevant to the industry, employs approximately 140 men and women, and we sell approximately 3 million pounds of CFC annually.

Who are these small businesses who distribute 99 percent of the refrigerants and what do they do for the economy and society? Refrigeration and air-conditioning parts wholesalers are comprised of approximately 1,000 individually owned companies and corporations with approximately 3,000 branch outlets throughout the United States. Of these 1,000 individually owned corporations, there are probably no more than 6 which we would consider today to be large corporations. The remaining number are all small family owned companies, started primarily in the thirties, forties, and fifties, and are being operated today by second and third generations.

We employ from approximately 5 to 10 in the small operations to over 100 in the large, multibranch distribution wholesalers, with volume anywhere from approximately one-half of a million dollars upward to $30 million per corporation.

What part do we play in the distribution of CFC's? Our function in the marketplace is to supply to the approximately 50,000 or

more small contractors parts, equipment, refrigerants which they use in their daily operation of their businesses, to service the needs of comfort cooling systems, air-conditioning, food processing, food storage systems, supermarket refrigeration, hospitals, blood banks, and so forth.

And how do these products get to the marketplace and by which method?

There are five manufacturers of CFC's in this country, all large corporations, who sell their products directly to small businessmen who purchase these products in truckload quantities for redistribution on a daily basis as the demands of the marketplace require. These small businessmen maintain the inventory, make credit available, and supply technical assistance to many contractors, and also provide for them a daily supply of the needed components that are used along with these refrigerants in the servicing and repairing of refrigeration and air-conditioning equipment. The needs of the contracts for CFC's are, in most cases, an instantaneous need. They do not know from day to day how many pounds of what product they will need for their equipment breakdown. Our purpose and function is to provide for them, on a local level, varieties and sufficient quantities for them to handle their needs and the needs of their customers 24 hours a day, 7 days a week.

The EPA has proposed a cap on production and would auction off permits for the right to produce or use CFC's. How would the needs of the public and small businesses be met when a small group of well-financed corporations could purchase and control the availability of CFC's in the marketplace that has needs for the product to maintain the standards of living which we are accustomed and which cannot be altered without devastating effect on some basic human needs.

It is well understood by all of us in the industry that a production limitation would create a complicated economic condition. Also, monopolies would, in essence, be promoted by the EPA.

Any system of redistribution of a limited commodity would lead to tremendous uncertainties on the part of both producers and users. Businessmen, contractors, and wholesalers could not plan or operate effectively under uncertainties relative to the availability of this most important product.

Due to the tremendous need for the CFC's, a cap on production could also create a black market where the price of the product would only be limited by its use value or demand.

To summarize, we cannot envision this economic approach by the EPA to limit production and to create false shortages to be in the best interest of small business or society in general. It would only tend to place these many small businesses in financial jeopardy caused by the overreaction of the EPA to regulate and control.

Thank you very much.

Mr. LUKEN. Thank you, Mr. Reilly.

Now Mr. Ravanesi from Melrose Park, Ill. We have your statement, do we not? Likewise, it will be introduced into the record without objection.

TESTIMONY OF P. W. RAVANESI, AIR-CONDITIONING WHOLESALER, SERVICE PARTS CO., MELROSE PARK, ILL.

Mr. RAVANESI. Good morning. My name is Pat Ravanesi and I am the president of Service Parts Co., in Melrose Park. I would like to thank you, Mr. Chairman, and the committee—this is my first exposure to our governmental process and I am glad to see the response from our elected officials to have the opportunity and ability to express our problems to you.

Service Parts Co. is a family owned business, established in 1938. We are a wholesale distributor of air-conditioning, refrigeration and heating equipment, products and tools. We specialize in commercial refrigeration, and by that I mean supermarket work, food preservation, meat cases, frozen food and dairy products. We have approximately 30 employees and annual sales of between $3.5 and $4.5 million. I currently serve as the president of the Air-Conditioning and Refrigeration Wholesalers Association, and I am a member of the Alliance for Responsible CFC Policy.

Upon reviewing the EPA's ANPR on CFC's, I see three major areas of concern which would directly affect my firm. These are loss of sales, loss of jobs, and additional capital needed for inventory and/or permits.

Under loss of sales, CFC's represent from 15–20 percent of our sales volume. A decrease in supply would directly affect these sales. Another 60 percent of our volume is in products which rely on CFC's to function. For example, compressors, condensing units, coils, valves, fittings, tubing, controls, et cetera. Without adequate CFC's, the sale of these products would decrease at a rate of approximately $10 for every dollar of CFC's. A decrease in CFC availability as proposed will mean a significant loss in sales to our company.

Under loss of jobs, in the wholesale business it is extremely labor intensive. For example, a loss of sales of approximately 20 percent would mean a loss of approximately nine jobs to our firm, based on $133,000 of sales per employee.

Under the increase in inventory investment and permits, our average inventory is approximately $800,000, with CFC's representing $80,000. Reduction in CFC supply would send prices skyrocketing. Prices could conceivably double, adding an additional $80,000 to our inventory. If a safe alternate refrigerant was developed—to date there is no substitute—we would be forced to carry almost a duplicate inventory, one representing equipment and products to service existing systems, and another complete inventory to serve the new refrigerant. Because of the amount of equipment presently in the field, any transition could take at least 10 years or longer, and probably require an additional $300,000 of inventory on our part, bringing the total additional inventory to approximately $380,000.

In today's business climate, small businesses such as ours find it difficult to retain capital in our company. Trying to raise the additional $380,000 estimated would prove to be difficult if not impossible, especially in light of decreasing sales.

The ANPR also mentioned that permits may be auctioned off to users for the right to buy CFC's from manufacturers. I do not see how my company could possibly outbid a General Motors, a York,

Carrier, or even larger wholesalers who have greater financial resources to draw upon. The vague and unclear terms of this ANPR leave small business at the mercy of the Government and large companies who have the resources to protect their best interests.

In my opinion, the economic impact of the EPA's proposed rulemaking on CFC's would have a severe and possibly devastating effect on our company and its employees.

Thank you.

Mr. LUKEN. Thank you, Mr. Ravanesi.

I have a general question. If the cap on CFC production which has been suggested by EPA were put in place, what would happen to CFC availability and distribution? Obviously, the shortages would bring about limited availability and an increase in cost; we have had some discussion of that. I think the EPA will have further discussion of this, as indicated in their prepared statement.

Do you foresee serious problems in actually obtaining the CFC product? Do any of you want to comment on this? Obviously small businesses would be in a lesser position than those dealing in larger quantities for obtaining the product if it is in short supply; but do you foresee an actual unavailability of CFC's at times?

Mr. RAVANESI. According, at least to our understanding of the ANPR, the cap would be put in place at a prior year's date and then a reduction in production would increase each year until they had a level of approximately 50 percent of the current levels. So not only would growth be restricted, as our industry is growing, but then they are going to cut back production. So it would definitely reduce the availability of the product on the marketplace.

Mr. LUKEN. Does anybody else have any comment on that?

Mr. REILLY. I can't overimpress, Mr. Luken, that the contractor needs a source of product available virtually 24 hours a day, throughout the country, within a 20- or 30-mile radius of any city.

If not readily available, and he has to wait 4 or 5 days to get his source of refrigerant, that equipment will be down, which means hospitals will be without air-conditioning, supermarkets without refrigeration. I don't think we can envision this, that when a contractor comes into our store and we tell him we don't have it, and we won't have it for another week, or we won't have it for 2 more weeks because we have used up our permits already, he is going to be spending a lot of time scrambling, if he can locate it, and at whatever price. And the price will be high, sir, because who has it is going to control the price.

Mr. LUKEN. So at best you would foresee uncertainties?

Mr. REILLY. Absolutely.

Mr. LUKEN. Which are not good for business, shall we say.

Mr. REILLY. We will open up for a chain store at 2 o'clock in the morning for 10 drums of refrigerant, because he needs it, because the ice cream is melting. If it is not available, what is he going to do? I don't know.

Mr. LUKEN. You are a wholesaler?

Mr. REILLY. Yes, sir, correct.

Mr. LUKEN. So for you and for those whom you supply, for example air-conditioning contractors like Mr. Fahrney, the impact

of CFC regulations would be felt more severely than by those businesses which have other product lines to fall back on?

Mr. REILLY. Absolutely, sir. We cannot survive without refrigerants. It is like a gas station being without gas. He is not going to do any tuneups. He is not going to sell oil. The gas is what brings them into the gas station and refrigerant and, of course, parts, is what brings them in to our place. They can't service equipment without Freon because every piece of equipment has a pound of Freon in it. It's very simple. They have to have refrigerants—excuse me. Freon is du Pont's trade name.

Every piece of equipment in the country, every home refrigerator, every window unit, every supermarket, uses CFC's, of which there are three or four popular compounds. They have to have it. There is no shortcut.

Mr. LUKEN. How do you foresee the distribution system functioning in a period of shortage?

Mr. REILLY. I think the man with the money, that can purchase the permits, will control the distribution. Now, how he goes after that, I don't know. He might come to the aftermarket and go to people like ourselves who have the contacts with the contractors—we have 4,000 contractors we do business with. Obviously, we could probably do a better job of distributing it than one large company, but not necessarily. He holds the goose that lays the golden egg. This gentleman has to have it, and I need it to survive. He's got it. He'll get whatever he needs for it, at whatever price.

Mr. LUKEN. Have you heard any proposals as to Government intervention in that supply system?

Mr. REILLY. No, sir. But I think if the Government intervened I think we would have a serious problem. We have trouble on a day-to-day——

Mr. LUKEN. I wasn't proposing it. [Laughter.]

Mr. REILLY. We have trouble enough running our own business, and I think we know what we are doing. And we're experts. I think let Government run Government and we will run our businesses.

Mr. LUKEN. Well, my reference was to the following: if the big businesses are the source of your CFC supply and if you are economically threatened due to a Government action on CFC supply, then the thought would obviously surface that the Government ought to provide some kind of a system of intervention in guaranteeing your supply. I guess your answer is you think Government intervention is so tainted that it couldn't possibly do that.

But for purposes of discussion——

Mr. RAVANESI. Mr. Chairman, I would like to comment on that.

Under the EPA's proposed rulemaking they mention possibly putting out for bid the right to purchase the permits. In the wholesaling and contracting end of the business, some of the larger corporations, the Carriers, the Lenoxes, they have not only established a wholesale outlet for their products and parts which directly compete with small business, some of them like Honeywell and Johnson Controls also are large corporations and have a service department which compete directly with the contractor.

Any bidding in that effort, even if it was on a wholesaler-to-wholesaler level, could affect us, because technically the large corporations have wholesale outlets. So we would again, even if they

categorized it by wholesaler, would be competing against these multimillion-dollar corporations.

The same with a contractor, who could be competing with a Honeywell for refrigerant, which I don't think they or us would have a prayer of outbidding them in a bid situation.

Mr. LUKEN. Do you think that if a cap would come under the EPA proposal, then this permit system would be carried out?

Mr. RAVANESI. Or even if a permit system didn't exist, and it was left open to the free market to seek its own level, the prices would get to a point where we couldn't afford it. We have limited resources. Honeywell or the Carrier Corp., have unlimited resources.

Mr. PIERCE. Mr. Chairman, at this time there has been no allocation system even talked about by the EPA. We are hoping that that is not the answer, because if you take the situation where we had gasoline——

Mr. LUKEN. But when they are talking about permits, isn't that a form of allocation?

Mr. PIERCE. Well, actually the highest bidder gets the permit, though, OK? You were asking about——

Mr. LUKEN. It is a form of allocation.

Mr. PIERCE. It is in a sense, but the guy who has the bucks gets the permit. The allocation system says you control the price. There has been no mention of a price control, or "I'm going to get so many pounds a year, regardless of what I have used in the past," OK? So, I am not proposing——

Mr. LUKEN. Well, who would issue the permits?

Mr. PIERCE. The Government would. You would buy the permit under the system that——

Mr. LUKEN. But it is a method of allocation. Anything that is not the free market would be a method of allocation. It might not be as objectionable or as pervasive as some other forms of allocation that we can think of. Nonetheless, it would be a form of allocation.

Mr. FAHRNEY. Mr. Chairman, even if the permit system wasn't used and the cap was put on the usage in 1979, we still have the competitor problem with the small businessman.

With the free use of CFC's right now, the small businessman still has great difficulty competing with major corporations, being Carrier, Honeywell, some of the major manufacturers, who have their own service operations, that we have to compete with on a day-to-day basis. Obviously, one of the advantages they have are the resources and the capital structures, the capital base.

If, in fact, a cap was put on this at 1979 levels, which means there is an artificially lower supply, those major corporations who deal on a day-to-day basis with the five major manufacturers of Freon, because of their manufacturing facilities, they are automatically—well, not automatically, but they obviously would have an advantage in buying what CFC's were available, leaving virtually nothing for the small businessman such as myself.

Mr. LUKEN. All right. I think I have taken my time. I have other questions, but I will yield to Mr. Williams.

Mr. WILLIAMS. I simply want to ask, in all of your opinions, what is wrong with the way it is now?

Mr. REILLY. There's nothing wrong or objectionable. It supplies the need of the marketplace. The marketplace seeks its own level pricewise.

Mr. WILLIAMS. Why, in your opinion, did EPA see the need? Is it simply the environmental problem that they are having? As I said from the outset, in my opinion the problem isn't that we have too much CFC's or too many CFC's in the air; we have too much ink in Washington.

I would simply, in my part of the questioning, ask what is the position, if you know, of the large conglomerates that you have talked about, your competitors that you deal with now, on this issue? Are any of those here, or do any of you know what their position may be?

Mr. REILLY. The president of Carrier, at the last alliance meeting, stood up and made it very clear that if there was a permit system and Carrier had 5,000 or 10,000 jobs that were supported by the need for refrigerants, he said when he sent out his man to buy that permit, he said he had better come back with it.

Carrier is owned by United Technologies. They have unlimited resources. The people with the money will get the product, there is no question in my mind, sir.

Mr. WILLIAMS. But as far as you know, they are not supportive—they would fight, apparently, the same battle you are fighting?

Mr. PIERCE. They joined the alliance, and as members of that alliance we have a single purpose, and that is to prohibit regulation of this situation.

Mr. WILLIAMS. I see. I don't think you want to leave the impression that you necessarily are afraid of the competition that you are involved in, because I know you deal with it on a daily basis. But I think it is important to know, if we can, where they stand, the guys with the bucks, as you say.

Mr. RAVANESI. I think they are against the regulation just as small businesses, but if it got to a point of regulation, we would be at a severe disadvantage. We also fear a problem arising where it could turn into a situation which happened with the silver commodity market. A few speculators were able to buy up enough to drive the prices beyond reason.

Mr. WILLIAMS. I have no further questions.

Mr. LUKEN. If I might interject—in this type of fierce competition for a product in short supply, terms of purchase would become a factor. A cash-only basis might be the terms of transactions. This situation would be unfair to small business owners because these persons currently face cash flow problems due to the high-interest rates.

So that a cash only basis, I assume, for many of the small business people would be unbearable, is that right?

Mr. REILLY. That is correct, sir. It will be cash for refrigerant, credit on the other parts, and if they don't pay their bills in 30 days they don't get refrigerant. It's very basic. The people who have the refrigerant control the industry.

Mr. LUKEN. Mr. Daub?

Mr. DAUB. Thank you, Mr. Chairman.

I didn't hear any of you address what seems to be the motivation for the proposed rulemaking, and that is that the CFC 11's and 12's

damage the ozone layer. Do you have professional opinions in that regard?

Mr. REILLY. No, sir, we do not.

Mr. DAUB. All right. Second, do you know of any kinds of research going on that might just be tried, if there is any incentive or reward for that to develop alternatives for those two particular items?

Mr. REILLY. Yes, there is, sir. I believe du Pont, Allied Chemical are probably right now looking for alternatives. It is in their best interest to do that.

Mr. DAUB. I want to point out that 2 weeks after the new administration was inaugurated, the Code of Federal Regulations was averaging 315 pages per day, and 2 weeks ago it is averaging less than 100 pages per day.

Thank you, Mr. Chairman.

Mr. LUKEN. Mr. Siljander, did you have any opening remarks?

Mr. SILJANDER. No; I would just like to associate myself with the comments made by Mr. Williams on the ink of the Government. I think it is well said and well put, sir.

I wonder if I could ask unanimous consent to leave the record open to submit some testimony by one of my constituents named the Whirlpool Corp., who is very interested in the CFC's.

Mr. LUKEN. Without objection, they will be received and the record will be left open.

Mr. SILJANDER. Thank you, Mr. Chairman. That is all I have.

[The Whirlpool Corp. prepared statement follows:]

PREPARED STATEMENT OF THE WHIRLPOOL CORP.

Whirlpool Corporation respectfully submits comments regarding the Environmental Protection Agency's (EPA) efforts to further regulate the use and production of chlorofluorocarbons (CFCs). Whirlpool is a leading manufacturer and marketer of major household appliances. A large portion of our total product lines consists of refrigerators, refrigerator-freezers, freezers, central and room air conditioners, commercial and home ice makers, and dehumidifiers. The use of CFCs is integral to our production operations, both as a refrigerant in our products' cooling systems and as a blowing agent for insulating foam used in refrigerators and freezers. Although Whirlpool's total usage of CFCs represent somewhat less than one percent of total U.S. production, EPA's proposed regulation to limit the production and availability of all forms of CFCs will have a tremendous and devastating impact on our business.

As such, we support the concept of Representative Luken's bill (H.R. 1853) which would preclude further EPA regulation of CFCs until additional studies can substantiate the ozone depletion theory. Our reasons for supporting this legislation are as follows:

Ozone depletion theory

The ozone depletion theory, authored by the National Academy of Science (NAS), and which now serves as the springboard for the EPA's proposed regulation of CFCs, is not universally accepted by the world scientific community. Equally knowledgeable scientists in Great Britian's Department of the Environment's Stratospheric Research Advisory Committee, along with several prominent American scientists, suggest that there are numerous questionable assumptions in the NAS study. The UK team concluded that the validity of NAS's theory is still in doubt. Several scientists have gone so far as to suggest that the foundation of the NAS study is based more upon speculation than it is upon a more disciplined body of scientific knowledge.

We believe that publication of regulations, the basis of which rests purely upon hypothesis or theory, establishes a dangerous precedent that could lead to an avalanche of additional regulations that are equally unsupportable by empirical evidence.

It would appear to us that the economic impact of the proposed regulation upon manufacturers and upon consumers is far too great to proceed purely upon the basis of theory. A study commissioned by the European Economic Community reported that a delay of five years before any decision is taken on CFCs can be reasonably accepted. Given the disagreement within the scientific community on this issue, it would seem reasonable to adopt Representative Luken's bill which would require further study and validation of the ozone depletion theory prior to proceeding with further rulemaking.

International participation

Although the "CFC problem" is global in scope, EPA proposes to unilaterally restrict the availability of CFCs in the United States, in hope that other nations will emulate America's lead. The severe reservations European scientists have with the NAS theory strongly suggest that international restrictions of CFCs will not be attainable. Past experiences also suggests other nations will not follow U.S. EPA's lead. EPA has published that only Sweden, Norway and Canada banned the use of CFCs as aerosol spray propellants when U.S. EPA promulgated an earlier regulation to restrict CFC use.[1] Indications today are that neither the European Economic Community, nor Japan, intend to apply restrictions under EPA's present proposed rule, in which case U.S. manufactured products would be at still one more severe competitive disadvantage in internatonal markets.

In 1979, imports of all CFC-based home appliances into U.S. markets numbered approximately 629,000 units. In the case of refrigerators, 1979 imports represented a very substantial 8.6 percent of total U.S. share of market. The U.S. would have to regulate foreign imports to the same degree as it would American products in order to protect American appliance manufacturers. However, if such action were taken (but, due to the global nature of the "ozone problem," we feel enforcement would be impractical), such a trade barrier could spark retaliatory measures in kind—especially from nations who legitimately disagree with the ozone depletion theory.

Energy considerations and lack of alternatives

Since 1972 the appliance industry has achieved energy efficiency gains of 45.2 percent (refrigerators), 47.6 percent (freezers), and 17.2 percent (room air conditioners). Whirlpool has exceeded industry averages with efficiency gains during the same period of 89 percent (refrigerators), 96 percent (vertical freezers), 49 percent (horizontal freezers), and 18 percent (room air conditioners). In part, a measure of our success is attributable to the availability and proper use of CFCs in these products. An explanation follows:

Use of CFC-11.—One of the most effective ways to increase efficiency in refrigerators and freezers is to use foam insulation between the liner and the cabinet. There has been a steadily increasing application (60 percent within Whirlpool) of foam in the domestic refrigerator business over the past several years, as consumers have opted for more efficient products. Polyurethane foam, which uses CFC-11 as its blowing agent, has superior thermal conductivity properties which are roughly twice as effective as fiberglass. Known alternatives to foam like fiberglass (as an insulation) or carbon dioxide (as a blowing agent) are poor alternatives. In fact, there are no known alternatives to CFC-11 which are as safe, non-toxic and effective in achieving superior insulation. Consequently, efforts to regulate CFC-11 will prove detrimental to our continuing thrust to develop increasingly energy efficient appliances.

Use of CFC-12.—CFC-12 is the refrigerant of choice in refrigeration systems designed to preserve food in home refrigerators and freezers. These systems operate at 110° F condenser and −15° F evaporator. The most logical alternative to CFC-12 is CFC-22. However, because of thermodynamic property differences, its use creates approximately a 2.3 percent penalty in efficiency loss. A second alternative, R-502 (a combination of CFC-12 and CFC-22) has an even greater energy penalty of 4.4 percent.

In addition to CFC-12's superior refrigerant qualities, it is also safe for consumer use. In fact, the use of CFC-12 has evolved because of the characteristics of its predecessors, ammonia and sulfur dioxide.

Besides the higher cost and restricted availability of alternatives to CFC-12 (competition for CFC-22 will be heightened if 11 and 12 are less available), reliability will become a major concern. Higher discharge temperatures of CFC-22 could create increased compressor failures.

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[1] "CFCs, Ozone, and Health," Toxic Information Series, OPA Document 124/0, U.S. Environmental Protection Agency, Office of Toxic Substances, Industry Assistance Office (TS-793), undated, p. 3.

Finally, redesigning refrigerators and freezers to use CFC–22 would require extensive system changes and corresponding product development. Not only would compressor changes be required, but heat exchangers and restrictors would also need to be redesigned in order to accommodate the use of CFC–22.

Similar comments also apply to dehumidifiers. However, since dehumidifiers operate within a narrower band of temperatures (45° F evaporator and 120° F condenser), the number of changes needed would be fewer. The energy penalty in using CFC–22 would be 3 percent, and the product changes would be slightly less. However, these changes would still represent a significant cost increase to consumers.

Use of CFC–22.—Air conditioners use CFC–22 because it is the most appropriate for optimum operating conditions. Under the proposed EPA regulations it would be the most available refrigerant. However, it is likely that a cap on production and subsequent switching to CFC–22 by other users would force its price upward.

Product pricing and availability

Restricting the availability of CFCs will necessarily constrict the number of refrigerators, freezers, room air conditioners and dehumidifiers available for sale. In a free market economy, we can expect this limitation not only to drive up consumer prices, but also to create a scarcity of CFC-based appliances. Appliance manufacturers have been highly successful in moderating consumer price increases at about half the overall 1980 increase in the CPI, and at the same time offering an increasing number of product convenience features. To limit CFCs would create a severe obstacle to continuing this trend.

Higher unemployment

Placing a cap on the availability of CFCs, and thereby the number of products which use CFCs, will result in a lower level of employment in the appliance industry than would occur without CFC restrictions. To what degree this level would be lowered will be largely dependent upon EPA's baseline year for establishing CFC restrictions.

Lost sales

Using a 1980 baseline, Whirlpool estimates that the opportunity cost to the company of lost sales as a result of limiting CFCs would be approximately 14 percent of our sales forecast just for the period 1981–1985. This would result in a ripple effect which could be substantially more devastating to our vendors and small suppliers of refrigeration parts. This projection assumes that EPA's regulation would prevent further market expansion in either the replacement or new household sectors. We believe that this is a tremendous cost for any industry to bear in order to comply with a regulation that is based purely upon totally unfounded speculation.

After-sales service

The thrust of EPA's proposed rulemaking appears to be directed primarily toward manufacturers and large users of CFCs. EPA, for instance, makes no reference in its ANPR to the literally tens of thousands of small, independent businesses who are also users of CFCs. In the home appliance repair industry alone, there are an estimated 65,000 repair businesses, a vast majority of which perform a vital function in servicing refrigeration systems in millions of homes throughout the nation.

Regulation of the service industry presents at least two problem areas. First, effective control of such a large number of service agencies would necessitate an administrative machine of vast dimensions. Such a program would not only be prohibitively costly to enforce, but would also trigger a scramble among large and small users contending for available CFC supplies. Second, absent an equitable allocation system, we would expect small users to either pay astronomical prices for CFCs, or to discontinue service operations. The consequences of either scenario would be disastrous to the economy: to consumers, who would pay a disproportionately higher service charge; or to service agency employees, many of whom would become unemployed. The costs of either set of circumstances appear unreasonable—especially when regulation is based upon an unproven and highly disputed theory.

Summary

A Rand Corporation Study commissioned by EPA states that CFC-based home appliances are a "poor target for regulatory action."[2] The study found that the level of CFC emissions from all home appliances was less than some of the "miscellaneous" products included in its analysis. "By 1990," the study reports, "even in

[2] Economic Implications of Regulating Chlorofluorocarbon Emissions From Nonaerosol Applications, Rand Corp., June 1980, p. 174.

the absence of policy action, home appliances will emit less than 10 million pounds of fully halogenated CFCs." (This compared to a 1990 total U.S. consumption rate of 794 million pounds.)[3] Additionally, a Department of Energy (DOE) analysis clearly supports a position that appliances should receive low priority for regulation when it concludes that CFC emissions from all household appliances are only about two percent of total U.S. emissions.[4] The effect of regulating CFCs used in home appliances would have only a miniscule impact on reducing the two percent usage factor, thus casting further doubt on any cost/benefit considerations.

The appliance industry represents a relatively small segment of total CFC-users. In all applications, CFCs are contained either through hermetic refrigeration or foam systems which prevent the release of CFCs into the atmosphere until after the life of the product is spent. Implementation of EPA proposals to impose additional restrictions on the use or production of CFCs could have far reaching economic and energy consequences which transcend the unproven environmental considerations. In addition, limitations would place small manufacturers at a severe disadvantage with larger companies to compete for a fixed supply of CFCs. In short, Representative Luken's alternative (H.R. 1853) represents a common sense approach which would allow the EPA to assess with greater assurance the impact and validity of the ozone depletion theory prior to imposing further regulatory burdens on an already suffering economy.

Mr. LUKEN. I thank you, Mr. Siljander.

I thank the panel. You gentlemen have presented a very comprehensive case for the small business people at the wholesale and the contractor level of the air-conditioning industry. We thank you very much for your presentation.

Mr. REILLY. Thank you.

PANEL CONSISTING OF H. W. "ACE" BRADLEY, WILLIAM JELIN, HUBERT COON, JR., AND LINDA KOHLER

Mr. LUKEN. Now we will have a panel of those in the foam business: manufacturers and contractors.

All right, gentlemen and lady. Do you have any particular order that you wish to proceed in? Mr. Bradley? You are Mr. H. W. "Ace" Bradley, a flexible foam manufacturer of the North Carolina Foam Industries, Mount Airy, N.C.

TESTIMONY OF H. W. "ACE" BRADLEY, NORTH CAROLINA FOAM INDUSTRIES, MOUNT AIRY, N.C.

Mr. BRADLEY. Thank you, Mr. Chairman.

Mr. LUKEN. We have your statement in writing, I believe, and without objection it will be received in the record. You may proceed in any way that you care to.

Mr. BRADLEY. Thank you, sir.

I am Harris W. or "Ace" Bradley, president and part owner of North Carolina Foam Industries.

North Carolina Foam is a manufacturer of flexible urethane foam, which is widely used as a cushioning material in the furniture and bedding industries.

Mr. LUKEN. Is all foam polyurethane?

Mr. BRADLEY. It is foamed polyurethane. All of our products are urethane foam. We also manufacture or formulate liquid chemical mixtures or systems, as we call them, which we sell to applicators who then make a sprayed urethane rigid-type material which is

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[3] Environmental Analysis (Technical Support Document No. 5), U.S. Department of Energy, Energy Efficiency Standards for Consumer Products, pp. 3-24 (tables 3-6).

[4] Ibid, p. E-2. (In making this statement, DOE cites as its source the National Academy of Science study, Protection Against Depletion of Stratospheric Ozone by Chlorofluorocarbons, Washington, D.C., 1979.)

used for insulation. But my comments today will refer chiefly to the flexible foam material, and I would especially like to address the position that we have as a small business enterprise and how we fit into the flexible foam industry nationwide.

North Carolina Foam is a privately held small company which employs about 120 people in a small town in the foothills of the Blue Ridge. It was founded 16 years ago with the aid, the critical aid, of the Small Business Administration and its 502 local development program. From that beginning as an SBA baby we have developed a very aggressive and profitable company, and we have repaid our $350,000 loan in taxes to the Federal Government and to the State and local governments some 10 times.

We have had a good history. We have been profitable. We are financially very healthy, but times are changing. Sales in the whole industry nationwide in the flexible foam industry amount to something in the neighborhood of $1½ billion. Our sales, of which we are very proud, are in the $10 million to $20 million range.

We supply, we figure, perhaps 1 to 2 percent of the flexible foam for the industry. Our main markets are furniture and bedding. Other markets, chiefly served by our competitors, and to some extent NCFI, are carpet underlay, and particularly transportation or automotive.

Times have changed inasmuch as, with the recent—within the past several years—economic slowdown, and particularly—as we are all aware—in the automotive industry, profit margins industrywide for flexible foam have become highly depressed and are at an alltime low. Consequently, the competitive position in the market has been extremely keen. Of course, this competitive position has led to the low profit margin, and particularly to a disproportionate pressure on the small business foamers like North Carolina Foam.

Our competitors are, as an example, those that are conglomerates—Tenneco—divisions of companies who have major interests in other fields, such as rubber—Firestone—and the larger flexible foam manufacturers who have multiplant operations in contrast to our single-plant operation in North Carolina.

An essential ingredient in the manufacture of all flexible foams is a fluorocarbon, CFC, and now we are being faced with two possibilities which have been suggested: One is to cap production, to limit the amount of CFC; and another has been the idea of a recovery and recycling to prevent the escape of the CFC to the stratosphere and the resulting ozone problems.

My point is that the small manufacturer, such as North Carolina Foam, will suffer a disproportionate penalty, if these things happen, which will border on disaster. If a production cap is mandated, the demand will promptly exceed the supply, the availability will become a great problem, prices for the available CFC will escalate, and foam prices will certainly go much higher. We will probably, as a small business concern, have to withdraw from our product line some of our products which use more of the CFC's than some others.

In any case, our costs are going to be higher than those of the larger companies for the simple reason that we will not have the purchasing devices which the large companies will have. Now,

these purchasing devices are not necessarily evil. They are lawful and ethical, but volume purchases, and the fact that the larger concerns can spread their costs over a larger product line, give an inherent advantage to the large producer which we, as a small business, do not have.

Mr. LUKEN. How would that be accentuated by a shortage?

Mr. BRADLEY. A shortage will certainly—it will be accentuated because the larger companies will be in a position to, with their greater cash-flow position, will be able to deal in larger contracts, longer term supply.

Mr. LUKEN. So it would have the effect of inhibiting competition greatly?

Mr. BRADLEY. Right. In that respect, we do not feel we could be competitive in that case. The price is going to be high, it is going up. The larger companies will be able to buy at the higher cost and, as I say, can easily spread their costs over other product lines.

The larger companies will still have a sharper competitive position. Their profit margin will diminish. I think ours will disappear, and our problem will be what to do with an unprofitable company.

If the recovery and recycling picture is developed, it will strike us particularly hard, because to have a recovery and recycling process, it will be extremely costly.

Mr. LUKEN. Who are your major competitors?

Mr. BRADLEY. Our major competitors are the multiplant operators. By name, there is the E. R. Carpenter Co., Richmond; Reeves Textile has four or five foaming plants; Firestone Co. has a number of plants; Tenneco Corp., a conglomerate, has several plants. There are probably—I don't know how many, but there must be 30 or 40 foamers, mostly larger businesses throughout the country.

If we have to have another solution to the ozone fluorocarbon problem, it has been suggested that it be recovered so that we don't keep building up the fluorocarbon content in the stratosphere.

This would be extremely costly. It will cost as much for us to put in a recovery system as our complete plant cost. A recovery system of that nature will also be suitable for a much larger plant, up to four or five times our size. So thus the larger company will be able to spread their unit cost over a production five times as great as ours. In other words, our cost per unit for this expense is going to be much higher than that for the large company.

So we are faced again with the decreased profit margin and the even greater competitive position that the small company will face versus the large one.

In summary, I would say the whole industry is going to be penalized because of the higher cost, much higher cost of CFC material, the inflationary cycle is going to be fed, and the whole industry is going to have a severe problem.

But the small producer, such as North Carolina Foam, is going to feel this much more accutely. And if this does happen, we say the same forces will act on us that will act on the large producer. But they are going to act on us as a small producer to a degree that would be disastrous. It would certainly threaten, if not require, the abandonment of our business.

Thank you, sir.

[Mr. Bradley's prepared statement follows:]

PREPARED STATEMENT OF H. W. BRADLEY, PRESIDENT, NORTH CAROLINA FOAM INDUSTRIES, INC., MOUNT AIRY, N.C.

My name is H. W. Bradley. I am President of North Carolina Foam Industries, Inc., in Mount Airy, North Carolina.

NCFI is a manufacturer of flexible urethane foam and a formulator of urethane foam systems widely used for thermal insulation. We are a relatively small but very successful and progressive company. We were founded sixteen years ago as a "SBA baby", being funded with a Small Business Administration loan of $350,000 in 1964. Since that time we have provided incomes for more than 100 families in our area and "repaid" our original SBA loan more than *tenfold* in the form of federal, state and municipal taxes.

NCFI is an independent, single facility flexible foam producer. In this industry there are also large, multi-plant companies such as Tenneco and Firestone.

In the event that Federal regulations place a cap on CFC production, we foresee the following sequence:

A. Early price rise of CFC's to exorbitant and non-uniform levels as demand exceeds supply.

B. Inability of NCFI, as a small business enterprise, to compete with the many large businesses in purchasing the limited supply of CFC's. Large firms can (1) more easily afford the greater cash flow problem, (2) "spread" the inflated CFC costs over other product lines, (3) make "trade-offs" by agreeing to purchase other materials from the CFC supplier (4) agree to barter with the CFC supplier using products of their own manufacture, (5) use other purchasing devices not available to NCFI.

C. Inability of NCFI to compete in the highly competitive urethane foam marketplace because of higher raw materials cost or lack of CFC to make the product.

D. Inability of NCFI to afford the technical effort required to develop flexible foam formulations to replace those product lines discontinued because of the unavailability or cost of CFC's.

E. Inability of NCFI to afford the capital expenditure of $500,000 to $1,500,000 estimated by an EPA Contractor for a CFC recycle and recovery system. I should note that these quite broad cost estimates are for a technology which is only speculative.

F. Decrease in sales volume, possibly by 50 percent or more.

G. Loss of profit margin because of increased costs and lower sales level.

H. Loss or termination of business, with attendant loss of jobs and loss of tax income to federal, state, and local agencies.

The economic consequences of the EPA proposed ceiling for North Carolina Foam Industries, as an SBA enterprise, will be disastrous. We must wait to resolve the questions about the validity of the theory before such drastic action is taken.

Mr. LUKEN. Thank you, Mr. Bradley, for a very effective presentation.

Mr. Jelin.

TESTIMONY OF WILLIAM JELIN, EXECUTIVE VICE PRESIDENT, NRG BARRIERS, SANFORD, MAINE

Mr. JELIN. I brought some samples with me today, not really for advertisement, but so we could know what we are talking about. These are some of our various products which, as you can see, are cellular plastic foam either laminated to a foil facing or laminated to a plywood facing.

Mr. LUKEN. All right, you are William Jelin, executive vice president and general manager of NRG Barriers in Sanford, Maine, correct?

Mr. JELIN. Yes.

Mr. LUKEN. And your statement is in the record by unanimous consent. So proceed as you started to.

Mr. JELIN. Our entire production capacity in Sanford, Maine, consists of a pressure laminated——

Mr. LUKEN. I didn't mean to get you back to your statement necessarily. If you want to start off explaining what you brought, and so on, that is fine with us.

Mr. JELIN. Basically, these are our products. We have one pressure laminator in Sanford, Maine. That is our entire production capacity. And the only thing it knows how to do is to spray fluorocarbons into a urethane cellular plastic.

Our products are used exclusively for roofing products and for side wall applications. We market to roofers or general contractors who use the urethane.

NRG Barriers is a small family owned business. My father and I are partners. We are situated in a converted textile mill built in the 1920's in Sanford, Maine. We employ approximately 40 women and men.

Although there are several other small urethane laminators, our major competitors are Johns-Manville, Gulf Oil, Celotex, GAF Corp. It doesn't bother me, but it is a problem sometimes.

Polyurethane insulation is the most effective insulation available. It has the highest R factor per inch than any other substance.

The trick to making polyurethane insulation foam is to encapsulate within the cellular structure of the urethane as much fluorocarbon gas as possible, because fluorocarbon is the most effective retarder of the transfer of heat, the definition of an R factor. The more gas you can trap inside the cellular structure, the better the R factor. If the gas dissipates, if you lose the gas, then it is no longer a good insulator.

So the trick is not to dissipate it into the atmosphere, not to lose it in the plant, but to maintain it within the cellular structure of the urethane.

Think of our product as a bank vault to protect a valuable asset. If you outlaw the asset or restrict the availability of the asset, you no longer need the vault. Anybody knows, with the price of oil today and the obsession of energy saving that fluorocarbons are one of our most valuable assets in the energy-saving field.

As a small business, privately owned and privately financed, we have found real advantages and some very ominous and scary disadvantages in the attempt to survive in the jungle of large multiline, multibillion-dollar operations.

The advantages are that we can be flexible and agile enough to respond to varying needs of the customers who are in fact almost exclusively small family owned businesses, the roofing contractors, the small general contractor. They like to call me up. They like to talk to me, because I am the owner of the company and they are the owners of their companies. So that really is a magic relationship which has helped our business.

Because NRG is not bogged down in the morass of bureaucraticness of bigness, we have been able to synthesize three or four unique products which have grabbed a big portion of the marketplace. One is this product, our nailable urethane; one is this product, our skin fire-rated urethane; and another is our skin tapered urethane, samples of that are much bigger, so I didn't bring them today.

Our powerful billion-dollar competitors have seen a need for these products, but somehow, despite their huge technical marketing staff, they have not been able to come up with competition for us. I am sure they will after we begin to absorb a little bit more of their market share.

So it is possible for a small company to compete with a big company if they do, and are allowed to, exercise their advantages which are product line agility and the unique ability to relate to the customers.

When the business cycle is bad, as it is today, our giant competitors can afford to cut prices or to extend credit to their customers for 9 or 10 months, which they did this winter. In a way, this cutting of prices is a hazard to inflationary effect. In another way, it makes me wonder how the competition is set up when they are selling the product 20 or 30 percent below what they sold it for 2 or 3 years ago, and the raw materials have gone up 20 or 30 percent.

For a manufacturer like NRG limited only to laminated urethane roof insulation, the problems of competing with large multibillion-dollar corporations can be very insidious. Many of the major corporations, Johns-Manville, GAF, Celotex, are vertically integrated so they make almost every aspect of the raw material that goes into the finished product.

Ironically, I have to buy this product from Johns-Manville and this product from GAF Corp. in order to make a product which I eventually hope to compete with them on.

Sometimes we wonder whether the divisions at the bottom of this pyramid are so profitable, divisions that we have to buy the raw materials from, that the major corporations don't mind being uncompetitive on the urethane divisions.

The proposed cap on the production of fluorocarbons would eventually be an ominous death now to all urethane businesses. NRG would be one of the first casualties because we have no other products to fall back on. The proposed cap would create a scarcity of fluorocarbons, obviously driving up the price and creating the severe problem of availability.

The arithmetic of energy savings simply will not tolerate an increased cost of urethane. Ironically, the proposed rulemaking for the EPA will again make it economical for people to waste energy. The nightmare of scouring the Earth for a continuous supply of this limited raw material is a far more oppressive thought for me, NRG Barriers, than it is for my competitors.

We have enough trouble keeping the show running, making the product, getting it sold, getting it made, getting it shipped. We simply do not have the resources to become full-time fluorocarbon purchasing agents.

Large companies can always allocate resources and personnel to circumvent increased Government regulation. Our resources, us, our personnel, are already stretched too thin.

Finally, I implore you, don't put us out of business. We don't make anything else but this product. Fluorocarbons are the active ingredient to this product. There is no substitute. There is something else you could put into the cellular plastic, but that does not have the heat retarding effect. Anything that could be used would be more expensive, harder to use for the contractor, driving up the price of the construction. But urethane will not be used.

Cutthroat competition to grab raw materials will eventually bring all manufacturers of urethane down. But the small manufacturers will be the next casualty, the war against fluorocarbons.

Thank you.

Mr. LUKEN. Thank you very much, Mr. Jelin.
[Mr. Jelin's prepared statement follows:]

PREPARED STATEMENT OF WILLIAM JELIN, EXECUTIVE VICE PRESIDENT, NRG BARRIERS, INC., SANFORD, MAINE

My name is William Jelin and I am Executive Vice President, General Manager of NRG Barriers, Sanford, Maine. Our entire products line consists of polyurethane insulation board for roofing and side wall applications. We sell to roofing contractors, distributors and lumber yards. NRG Barriers is a small family owned business. My father and I are partners. We are located in a converted textile mill in Maine and employ 40 women and men. Although there are several other small businesses manufacturing our product line, our major competition is Johns-Manville, Celotex, Gulf Oil, Owens-Corning, GAF, all multi-billion dollar building material conglomerates. Polyurethane insulation is the most efficient thermal insulation available. It has a higher R factor per inch than any other substance. The essence of the product is a cellular plastic designed to trap and maintain the maximum amount of fluorocarbon gas. Because fluorocarbons are the most effective way of retarding the transfer of heat, the more gas packaged within the cells of the plastics foam board the higher the R factor of the insulation. Urethane insulation is the best insulator only because it can trap and retain overtime more gas than any other cellular plastic. Think of our product as a bank vault to protect a valuable asset—energy saving fluorocarbon. If you outlaw the asset, you no longer have a need for the vault.

I have found real advantages and handicaps as a small business, privately owned and privately financed, in trying to survive in the jungle of large multi-line, multi-billion dollar conglomerates. The advantages are that we can be flexible and agile enough to respond to the changing needs of the marketplace and to service our customers who are almost exclusively small family owned businesses. We have developed three unique products; a nailable urethane, a skin-tapered urethane and a fire rated urethane which huge companies have not wanted to or been able to synthesize despite their huge technical and marketing staffs. So it is possible for smallness to triumph over bigness if you are allowed to express your advantages—customer service and product line agility. There are inherent problems to the small business group when dealing with the giants. When the business cycle is bad, the giants can afford to cut their terms of sale to 6 months from date of invoice to absorb these losses through other divisions. Many of our competitors are vertically integrated in the urethane business so they can actually supply the raw materials for the finished urethane products. I don't have the flexibility of violating the most cardinal rule of being in business—to make a profit on what you sell.

The proposed cap on the production of fluorocarbons would eventually be an ominous death to the urethane business. NRG would be one of the first casualties. We have no other product to fall back on. The proposed cap would cause a scarcity of fluorocarbon, driving up the price and creating a severe problem with availability. The arithmetic of energy saving simply will not tolerate an increased cost of urethane. It will again become economical for people to waste energy. The nightmare of scouring the earth for a continuous supply of the limited raw materials is a far more impressive thought for me than it is for my erstwhile competitors. I have enough trouble keeping the show running, getting the product sold, made and shipped. I simply do not have the resources to become a full time fluorocarbon purchasing agent. Large companies can always allocate resources and personnel to handle or circumvent increased government regulation. My resource is me. I am already stretched thin.

Finally, I implore, don't put me out of business. I don't make anything else but this product, unlike major building materials products companies which can rely on various other product lines. The cutthroat competition to grab scarce materials will eventually bring us all down but the small manufacturers will be one of the first casualties in the war against fluorocarbons.

Mr. LUKEN. Next is Mr. Coon.

TESTIMONY OF HUBERT COON, JR., GENERAL SUPPLY CO., SAN ANTONIO, TEX.

Mr. COON. Thank you, sir.

Mr. LUKEN. Hubert Coon, you are in the urethane foam insulation business in San Antonio, Tex.; is that right?

Mr. COON. Yes, sir.

Mr. LUKEN. Thank you for your statement that you have submitted and, without objection, it will be received into the record.

Mr. COON. Thank you, sir.

Mr. LUKEN. Proceed.

Mr. COON. Mr. Chairman, my name is Hubert Coon, Jr., and I do live in San Antonio, Tex. I am associated with General Supply Co., and, as my statement says, I have been for nearly 25 years of my life engaged in the construction industry. Very simply, I am a contractor.

If I may say this, you have my statement, as you have accepted it, and I thank you for that. I would like to digress just a moment to say to you, I am not only a contractor, but I am what is known in the industry as a foam contractor.

If I may borrow that sample right there. I make this product and put it in buildings through the use of a spray gun. This is my life.

Mr. LUKEN. Do you make it?

Mr. COON. Yes, sir, by the mixing of components and going ahead and applying it to the surfaces of buildings, we make a product that is useful in our country, very useful.

Our firm, as I have said, is a construction firm. We employ about 200 people.

Digressing a little more, I want to thank you for letting me come here today. This is quite an honor for a country boy to even come to our National Capital, which I have all of my life held in high esteem.

But I am disturbed that I am here today, Mr. Chairman, I am disturbed that it is necessary for me to come here. And I was further disturbed as I heard these proceedings go on today with the thought that regulation is even necessary, because in my heart I know that that point made over there a while ago, why do we even consider the form of regulation. As I go on, I want to speak to that issue.

Regulation, in this case, needs to be that which does not occur. A large portion of our construction effort is in the business of spraying polyurethane foam. When we use this product, we use it in our business two ways. We apply it as an insulator in low-temperature buildings—my statement tells you some of those usages—buildings which various food and other products, meats, fruits, vegetables, things of this nature, are processed, stored, et cetera. It is an effective insulator.

We depend on a chlorofluorocarbon to fill the cell structure of this insulation. We do not have an alternative method, nor is there one in the offing, and it has been explored, I am told. We don't have any other way to make it without a chlorofluorocarbon.

When you regulate or ban the use of chlorofluorocarbons, we don't have a product. And when you do that, I don't have a way to make a living. This is the way I have been making a living since 1966. About 50 of the people, of the 200 people which we employ at our firm, will have to find another way to make a living, because this is what they are employed doing.

Gentlemen, it is an honor for me to appear before you in another capacity also. We are one of the largest foam contractors and we have a chance to survive as a corporate entity because of some other avenues. But I appear before you as vice president of the

Urethane Foam Contractors Association, otherwise known as the UFCA. This is a trade association. It has about 700 or 800 members. Across our country, there are about 1,500 other foam contractors like these members of our trade association.

Most of these people are small people that have two or three trucks, they have 5 to 15 employees. They do one thing. It is the only thing their business is predicated on. They spray polyurethane foam as an insulator in buildings. They have got their life savings tied up in it.

When they don't have a product to spray, or when it is noncompetitive, they are not in business. It is just that simple.

I would like to give you a couple of examples, if I may, and I call this forth to you, of some things we have done so that you can understand.

I have said there are two ways we use the product at our firm. We have in our city, San Antonio, a large produce terminal into which flows fruit, vegetables, agricultural products of all types, which are processed and stored and are redistributed to the rest of our State. Most of the buildings are refrigerated.

Recently, we put an addition, a large one, onto that facility there. We insulated it with polyurethane foam. Yet, had the price of this product been high, very likely that facility could not have been enlarged, thus enlarging the distribution process of food within our area, employing more people, et cetera.

Had it not been available, knowing what the alternatives were, I doubt that it would have been built. I very seriously do.

We have a facility in our city called the Henry B. Gonzalez Convention Center. The focal point of our Convention Center is a large dome building. It is called the Convention Center Arena. For 10 years after that building was built, it leaked water into it in such a way that it was quite an embarrassment to our city.

One time I saw the Indiana Pacers and the San Antonio Spurs try to play basketball, and they couldn't play because it was raining in center court.

Three or four years ago, we sprayed the top of the building with polyurethane foam and stabilized the structure and covered it with a waterproofing membrane. We today are able to keep the water out of our pride and joy, our Convention Center Arena, because we could stabilize the structure, make it quit leaking, make it quit tearing up the roof membrane.

Now if we had not had a product available for use such as this, it would still leak. If the cost had been greater due to some nonsensical—pardon my French—regulation. Our city could not probably have afforded to make that repair to that facility.

Now this type of thing has gone on around the country, the use of this is widespread. It has—I can name you a number of projects which you would recognize on which this has occurred. One is the Super Dome in New Orleans, another is the convention center in Wichita, Kans., and on and on.

I think I have said pretty well what I want to say to you, with this exception, gentlemen: As I look at my fellow contractors who are much smaller than I am, and as I talk with them, we find that something over 50 percent of the clerical effort we are putting into our business today is a response to a regulatory process.

We resent that. We resent it a whole lot.

But what you are proposing now is not going to burden us responding to a regulatory process; it is going to literally wipe a lot of good, honest, small businesses off the face of the Earth as an endeavor. And we would ask you: Don't let that happen.

Thank you for letting us speak to you.

[Mr. Coon's prepared statement follows:]

PREPARED STATEMENT OF HUBERT COON, JR., GENERAL SUPPLY CO., SAN ANTONIO, TEX.

My name is Hubert Coon Jr., I live in San Antonio, Texas and I am associated with General Supply Company, Inc. and have been for nearly 25 years. General Supply Company is a construction related supply and contracting firm having been in business since 1916. We employ approximately 200 people. A large portion of our construction effort is the application of sprayed in place polyurethane foam which is used as the insulating component in fluid-applied roof systems and as an insulation in refrigerated storage warehouses, meat processing plants, food, vegetable, fruit, storage, distribution and processing plants. Because rigid polyurethane foam is the most effective insulating material available in the marketplace, it is highly desirable that we be able to continue to use it for economic and energy conservation reasons. No alternatives to sprayed on polyurethane foam are available for use as a component in fluid-applied roof systems. Rigid polyurethane foam insulations are effective because the cell structure of the materials are filled with chlorofluorocarbons. Without this filling of the cell structure the materials are not as good insulators. Should the usage of chlorofluorocarbons be banned or restrictively regulated, my method of gaining a personal livelihood will be severely restricted. Approximately 50 of the 200 people which we employ will probably be forced to find other measures of gaining a livelihood.

Presently, I am Vice President of the Urethane Foam Contractors Association (UFCA), a trade association with approximately 700 to 800 contractor members. Across our country are another approximate 1500 contractors who are non-members. Most of these firms are sole proprietorships employing 5 to 15 people who depend on polyurethane foam in a single, special type endeavor. I can tell you that regulation will probably destroy most of these small business endeavors. The proposed production ceiling could wipe out business of a man who has his whole life savings in it; this is his only endeavor.

I will give you two examples of jobs my company recently did. The examples could be multiplied by the more than 2000 foam contractors around the country.

The San Antonio produce terminal market is a facility through which flows fresh vegetables and fruits for storage, processing and distribution for a large portion of our state. A recent substantial addition to this facility was insulated with polyurethane foam. Had we not had this insulation method available, this project would literally not have been built due to the higher construction and operating costs that would have been inherent.

Another facility, The Henry B. Gonzalez Convention Center, in our city, has a focal point a large dome building called the Arena Building. Built in 1967, the roof leaked extensively for two years. Polyurethane foam was applied to the roof area to stabilize the structure, preventing the new roof membrane from being ruptured and creating a leak-proof building. No substitute material for a use such as this appears available. If the cost had been greater, our city would probably have had to forego this effort.

A like center is found in Wichita, Kansas and at a number of other points in our country which have been treated in the same manner.

A price increase in our product due to the proposed fluorocarbon production ceiling would make us largely non-competitive or economically unfeasible in fluid-applied roofing systems and would certainly limit the amount of work we would be able to do in insulating refrigerated buildings. Today, in the fluid-applied roofing field, the volume of business is less than that which we would like because of our current costs. If we increase our cost, then we become totally non-competitive. In the area of insulation, in refrigerated buildings, many of the construction efforts that go on today are marginal due to the current costs of construction. For example, I know for a fact that the produce terminal had to be "trimmed" in price before its construction and had we had a higher price they would not have been able to build the building.

In small businesses, as we look around, something over 50% of clerical help today is devoted to responding to some form of the regulatory process. We have come to

the place that this is quite a burden and there is some resentment of this, not a little, in fact, a lot. However, this proposed regulation is the most damaging regulation that it had been our experience to come across and it will literally wipe out the small business endeavor as opposed to only burdening us.

Mr. WILLIAMS. Thank you, Mr. Coon, for very effective testimony.

What is now occurring, if you have heard the bells and noticed the clock, there is a vote in progress on the floor of the House. Mr. Luken, the chairman, went over to vote, and as soon as he returns, I will leave.

We will now proceed with the last witness on this panel, Linda Kohler, former owner-operator of a polystyrene foam business, Florida Containers, Inc., Sebring, Fla.

TESTIMONY OF LINDA KOHLER, FORMER OWNER, FLORIDA CONTAINERS, INC., SEBRING, FLA.

Ms. KOHLER. Thank you.

I think that I sit here in a little bit different place, perhaps, than anyone else is here today, because I am an ex-small-business owner. I am unemployed at the moment, by choice. I have nothing to gain or lose by EPA's proposed regulations on CFC's.

I am here because I believe in the cause. And I am also here because I believe in the free enterprise system. I think this CFC issue is a great example of some of the things that are wrong with the system today.

I am a former owner of Florida Containers, Inc. Our company is still in existence, still in operation, and still successful. I have passed on the problem of being affected by this kind of legislation to someone else, fortunately.

We began and ran our business for 12 years. The CFC rulemaking was part of our decision to sell it. It wasn't the decisive one, but it was part of it.

We had some options, had it been passed. We could have switched to pentane. Pentane makes styrene foam, as does Freon; but it is volatile, it is explosive. Several large companies in our industry are using it, and they have been kind enough to demonstrate to us what happens when you do. They have burned down entire facilities.

The change to pentane is incredibly expensive, or would have been incredibly expensive from my viewpoint. It would have been something I couldn't afford to do. You have to have sparkproof systems or remotely locate them. You must do something to protect your people and your equipment from this potential volatile gas.

The other option of the auction for the licenses was one that I really didn't see I could participate in either.

I agree with you, Mr. Williams, in your one comment about we are not trying to throw the mud at big business here today. I am not. They are part of the system. And it is because of them that I could be in business. I could outmaneuver them, I could outservice them, and I welcome them as part of the system. They will be affected by this also.

But something that does disturb me in all of this, as I have mentioned in my testimony, is that we have come this far, that we are here today trying to decide what effect this regulation may have on small business when, in my opinion, we shouldn't be anywhere near that today.

As I understand it, and I am not an expert in the ozone theory, but as I understand it from having to be up on this to some extent from being in business, we don't know enough yet to know whether this really affects the ozone layer or not.

I really do find it incredibly irresponsible and just truly unbelievable that a protective arm of the U.S. Government has proposed to regulate based solely on the theory that this chlorofluorocarbon may harm the ozone layer.

I can't help but get a little excited about this. I said I am going to come up here and I am going to be calm, and I am just going to say——

Mr. WILLIAMS. You have done that very well. [Laughter.]

Ms. KOHLER. I can't do that.

On top of that, part of my tax dollars are paying for these people to do this. That makes me—I am glad I am here. I am glad I have the opportunity to say something about this.

I don't know what to tell you about the effect on small business. Everybody has said the same thing. You know, it is going to devastate them, it is going to put them out of business. It would have put me out of business. I couldn't have functioned in this system.

But the free enterprise system, as it was conceived, and as we fought for and developed it, works. All the regulating that we have done to it has made it necessary for you to come here today and offer more regulations so I can participate in it.

I don't want that. I want the system such that I can participate in it really because it is what it should be.

I guess that is all I have to say.

[Ms. Kohler's prepared statement follows:]

PREPARED STATEMENT OF LINDA KOHLER, FORMER OWNER, FLORIDA CONTAINERS, INC., SEBRING, FLA.

My name is Linda Kohler. I am a former owner of Florida Containers, Inc. of Sebring, Florida. I was an owner-operator of this company from its inception in 1969 until February of this year when it was sold. The chief products of Florida Containers are egg cartons and sandwich containers made from polystyrene foam. Chlorofluorocarbon 12 is the blowing agent we use and is still in use there today. Potential EPA regulations on CFC's was an influencing factor in our decision to sell the company, however it was not the decisive one. Many things go into a decision to sell a company that you began and operated for 12 years and to expound on this would be superfluous to the topic at hand. However, having sold Florida Containers, it is a relief to no longer have this potential threat to my livelihood to worry about.

I would like to take this opportunity to explain why I view the potential EPA regulation as a threat and what plans I had to protect my company. The only substitute for chlorofluorocarbons in our process available today is pentane. Pentane is an explosive, volatile substance which poses both a threat to life and property. There are several companies in our industry that have always used pentane, as a result of this some of these companies have had many fires including the near total destruction of three manufacturing plants. To convert a polystyrene plant from CFC's to pentane is a very expensive undertaking, one that Florida Containers could not afford. Complete electrical systems must be changed, the spark-proof system must be remotely located so there is no possibility of an electrical spark setting off a fire with the volatile gas present. I would conservatively estimate that this is an unproductive cost of at least $300,000 for Florida Containers, one which I could not afford and which as you can see from my previous comments does not necessarily spare you from disaster. A fire is never a pleasant occurrence however, the larger companies in our industry, with multiple plant locations are not out of business if one location has a fire. The few small businesses in this industry lose a plant and they are out of business. I think it would be literally impossible to have a new facility operating in less than nine months, at which time you would no longer have any customers to sell your products to. There are very few small businesses that could afford the time it would take to build a

new work force and get back in the market place. We certainly could not have withstood those burdens.

The possibility of a CFC ban or the selling of licenses to use them is a threat of annihilation to our company. We would not have been able to afford to change to pentane nor would we have been able to compete with the much larger companies in an auction for the licenses. Had we not sold the company, it was our intention to diversify and find other products that did not require the use of CFC to manufacture. Small businesses do not have a great deal of capital available to them to accomplish this kind of diversification. We could only hope that the irresponsible actions of the US Government would bog down long enough for us to accomplish this. Fortunately, we no longer have to worry about that.

I would like to explain why I consider the existing and potential CFC regulations as irresponsible. As you may or may not know the facts are not in on CFC's, government and industry have just begun to compile data on the ozone layer. I feel it is impossible at this time to know what does or does not affect us. A good example of this is that based on someone's theory it was taken as fact that the supersonic transport would harm the ozone layer. As close as can be ascertained at this time the converse of this appears to be true. I find it very irresponsible that a protective arm of the US Government has set out to regulate a substance with regulations that could have put me out of business armed solely with a theoretic model that says "CFC may harm the ozone layer".

When government reaches these proportions where it can act merely because it has power, instead of because it has the facts, it disturbs me that part of our tax dollar is going to support this kind of mentality. I, like everyone else, am a citizen of this world. We as people have certainly adequately demonstrated that having a disregard for nature can destroy the very environment we need to survive. Respect for and appreciation of our surroundings is an integral part of a healthy life. If CFC's are found to be harmful to the only world in which man can survive, I would be one of the first in line to support regulating its use. However, we do not know what CFC's do, if anything, to the environment and I am sure that the part of my tax dollar that goes towards protecting and enhancing our environment could be better spent on the known villains of our time.

Mr. WILLIAMS. Thank you very much.

I am going to have to walk over and vote here. But before I leave, I think I would like to ask you to stay where you are in case the chairman has any questions. And we will continue the hearing.

I simply have a comment to make. If you have noticed, I have been pretty consistent with my comments. Once again, EPA, which is probably my favorite agency, has really done a thorough job, and I am looking forward to the testimony of the two individuals. But looking at the list of people testifying today, once again, EPA has almost thoroughly affected everything we do everyday of our lives.

We are no longer going to be cool. We are no longer going to be able to insulate our homes effectively, which is one of the main thrusts of what we have been trying to do here in the saving of energy. It appears we are having trouble keeping clean, as well as eating good food and being able to refrigerate it properly.

I, too, am concerned about the ozone factor and the relationship that CFC's have on that. But it would seem to me that what you are presenting to us today is pretty decent evidence that we may have larger problems than that right now.

As I said, from Youngstown, Ohio, we saw many, many major steel facilities close because the EPA wanted to create a trout stream running through that valley, in Public Law 92-500, the Clean Water Act. There never was trout in the river and there never will be. And I have a lot of problems with what EPA is proposing.

Again, I congratulate all of you for having the courage to be very candid in your statements, and expressions to Members of Congress who do have an ability to deal with the agencies that we are all

struggling with, so that we may be better able to try to change them.

Thank you.

Ms. KOHLER. Mr. Luken, if I could just interject for one moment something that you had addressed briefly at the beginning our panel?

Mr. LUKEN [presiding]. Yes.

Ms. KOHLER. You asked, I think, if all foam was urethane. It is not. There is another foam also, which is polystyrene foam, and I represent that end of it.

Mr. LUKEN. Yes.

Well, as Mr. Bedell said, we are not going to go into the technical and scientific end of that, because we don't know a damn thing about it. [Laughter.]

But I thought that sounded like an intelligent question. [Laughter.]

Ms. KOHLER. I wanted to give you a good answer.

Mr. LUKEN. All right. Thank you very much.

In just glancing over this, I did ask a couple of questions as we were going along, and I believe that your testimony has been self-explanatory. It has also been very effective.

I am not sure who lined up these witnesses, whether it was the staff or some others who are helped, but I think that, at least thus far, the witnesses have done a very effective job of marshaling the arguments in the testimony and putting it in proper perspectives. As a result we can see not only the extensive effect of this potential regulation upon the economy in general, but also the impact on small business in particular.

With that, I thank you very much for your testimony, and we will move on to the next witnesses.

We have two more panels who have a brief presentation, and then we will get to the Environmental Protection Agency to complete this morning's hearing.

As you can see, what we have been trying to do is make the hearing continuous in the interest of time so that when the bells rang for a vote, I went to vote and Mr. Williams waited here. Now he is voting. I presume he will be returning.

PANEL CONSISTING OF RAYMOND WAY, JOHN RANDAZZO, DAVID BEGIN, AND CLAY SMITH

Mr. LUKEN. We will now move on to the Solvents, Sterilization and Food Freezing Panel: Mr. Smith, Mr. Randazzo, Mr. Way, and Mr. David Begin.

Mr. Way, are you going to initiate proceedings here?

Mr. WAY. Yes, sir.

Mr. LUKEN. All right. You may proceed.

TESTIMONY OF RAYMOND WAY, DIRECTOR, TECHNOLOGY AND COMPLIANCE, CRESCENT MANUFACTURING CO., SEATTLE, WASH.

Mr. WAY. Good morning. My name is Raymond Way, director of technology and compliance for the Crescent Manufacturing Co. of Seattle, Wash.

I might say that in some respects, this is a voice from the outer limits. Crescent is a member of the Alliance for Responsible CFC Policy, and firms such as ours certainly do need the help of these kinds of organizations. We use a sterilant gas which has been diluted with CFC–12 for reasons that I will explain.

Crescent Foods is deeply concerned about the EPA proposal to restrict the production of CFC's, because we depend upon this gas as a safe and suitable diluent for ethylene oxide. Ethylene oxide is the only viable fumigant available that is effective in eliminating potentially harmful bacteria such as salmonella from spices.

Ethylene oxide is a highly flammable gas and must be diluted to a safe level using inert gas such as CFC–12 in order for us to use it. Essentially, all older plant facilities are faced with this problem in that fire department regulations and insurance considerations preclude the use of pure ethylene oxide gas in many instances, including our own facility.

A survey of the members of the American Spice Trade Association in 1978 revealed there were 10 firms out of a total of 19 recording the capability of sterilizing spices that depend upon CFC–12 for this operation. The balance were using pure ethylene oxide, including the giants of our industry such as McCormick & Co., of Baltimore whose subsidiary in California, Schilling, is our major competitor in the Pacific Northwest.

I should like to discuss briefly some of the economics involved in the treatment of spices with these sterilants. In 1978, the cost of ethylene oxide was about 60 cents a pound and 50 cents a pound for 12–88; or 12-percent ethylene oxide—88 percent CFC–12.

At first glance, it would seem that the diluted gas would be the better choice. However, it takes some eight times more 12–88 gas than it does ethylene oxide to achieve the same results. This differential in cost would be even greater today. The present cost to us for the 12–88 gas is 92 cents per pound.

It is clear that at the very least, if CFC's were to be restricted in production, the additional cost incurred by Crescent to compete for available stocks of gas would eliminate us from the sterilized spice market, which is the lion's share of spices sold to food manufacturers.

Of the spice we sell, 42.5 percent is for industrial accounts who require a reduction, or may require a reduction, in the microbial content of the spices they purchase.

It is ironic that while we are trying to preserve our ability to properly treat spices to lower the microbial loads therein, another Federal agency has once again announced its intention to impose microbiological quality standards for foods.

I wonder if there is any chance at all if Congressman Williams might turn some of his excellent attention to the Pure Food and Drug Administration.

Insofar as nearly all foods are seasoned to varying degrees—and this is an essential facet of good nutrition—it appears that we have been placed into a Catch–22 situation.

The loss of these accounts, or even a part of them, would have a severe negative impact upon our retail and food service spice business. While we have three other product lines comprising the bal-

ance of materials sold, our projections indicate they would not be able to support the additional burden placed upon them.

In light of the above, it is clear we could not remain competitive with those firms who have the privilege of using pure ethylene oxide gas for their treatment of spices. This could result in the loss of some 150 jobs, impacting on some 700 individuals.

We at Crescent urge you to support legislation that would prohibit the EPA from issuing unnecessary regulations that could have an irreparable effect on the welfare of our company.

Mr. LUKEN. Do you have more specifics in mind for such legislation?

Mr. WAY. Well, Mr. Chairman, I don't believe I am really qualified——

Mr. LUKEN. Neither are we, but we do it all the time. [Laughter.]

Mr. WAY. Very good. That makes me feel more at home. My never-never land happens to be in the scientific field.

Mr. LUKEN. I just wondered if you would expand on it in any way; please elaborate or be more specific about it.

I would like to hear it. I am also on the Health and Environment Subcommittee of the Energy and Commerce Committee.

Mr. WAY. I am not certain that I understood your question. Is it, do we have suggestions as to how we might obtain available gas should regulations be imposed up us?

Mr. LUKEN. In your final sentence of your statement you suggested that we consider legislation prohibiting the EPA from issuing unnecessary regulations that could have an irreparable effect on the welfare of our company.

Mr. WAY. Yes.

Mr. LUKEN. I have introduced legislation, H.R. 1853, with regard to CFC's which would prevent the EPA from moving any further on this regulation until more studies can be completed on the validity of the ozone depletion theory.

Is that what you had in mind?

Mr. WAY. Yes, sir. And I have been made aware of it, but I must confess that I have not obtained a copy of the legislation that you referred to. I understand it is H.R. 1853.

Mr. LUKEN. But I assume from your testimony—I was distracted for a minute, and I apologize—that you are looking for some broader kinds of legislation than just the legislation that I am talking about with reference to CFC's, right?

Mr. WAY. Well, yes.

Mr. LUKEN. Standards in the food area?

Mr. WAY. Yes; certainly our company would be prepared to support that sort of legislation.

Of course, I do have, and admittedly, a somewhat narrow interest on the surface. But I would bring to your attention that——

Mr. LUKEN. This would be in the food safety?

Mr. WAY. Yes, this is correct, because there is a pyramid effect. If companies in our general category are no longer in any position to treat spices, then there is always the chance, and certainly in the view of the Pure Food and Drug Administration, that there would be introduced into interstate commerce spices that may have pathogenic organisms in them. This is our concern, that we have

the ability to do as good a job as our competitors are doing in this area.

Mr. LUKEN. Thank you very much. It certainly heightens my interest in this area. I intend to investigate further into these subjects that you brought up.

Mr. Randazzo.

We have your prepared statement which will be accepted into the record, and you may summarize it or any way you desire.

TESTIMONY OF JOHN RANDAZZO, FROZEN FOOD PROCESSOR, BRILLIANT SEAFOOD, INC., BOSTON, MASS.

Mr. RANDAZZO. Thank you, Mr. Chairman.

My name is John Randazzo. I am president of Brilliant Seafood. What we do is we cook, freeze, and distribute shrimp throughout supermarkets in the United States of America.

To make the process simple and short to you so you can understand what we are doing, we cook the shrimp and it enters a freezer. In that freezer is Freon. The Freon freezes the shrimp. It freezes them individually.

Now our problem happens to be that there really is no alternate freezing method. There are freezing methods, but ones we do not deem acceptable—carbon dioxide and liquid nitrogen. What they do, they do not do what Freon does, they do not freeze each shrimp individually. What they do is they freeze them in big clumps.

Well the shrimp comes out of the freezer and goes into packaging equipment. And when big clumps of shrimp hit automatic packaging equipment, everything gets destroyed, everything becomes very inefficient.

We are processing somewhere in the vicinity of 4 million pieces of shrimp a day, so we need to run an efficient operation. When this shrimp, clumped up, gets into the freezer cases in the supermarket, it is not an acceptable product for the consumer, not like an individually frozen bag of shrimp.

Therefore, we would see that we would probably lose business in that if the product stayed in the freezer case for more than 2 weeks in a supermarket, it would clump up into a bag of ice and not a bag of shrimp. People wouldn't buy it. If people did buy it, we would get a lot of very nasty letters, and we would have to make a lot of refunds.

It takes about 350 pounds of Freon to freeze 20,000 pounds of shrimp. It takes almost 20,000 pounds of carbon dioxide or nitrogen to freeze 20,000 pounds of shrimp.

When I first started working in 1979, there was a worldwide carbon dioxide shortage. We do use carbon dioxide on our other lines. We couldn't operate. I would hate to see that happen again.

Mr. LUKEN. Tell us more about that.

Mr. RANDAZZO. From what I understand, there was a shortage, I think it was due to refineries or something which make CO_2 were not in operation, and the CO_2 deliveries were sporadic. We need to get the tank filled up every couple of days. It wasn't happening, so we would be running one line with CO_2, and then we would stop that line and run another line with CO_2. It really became a problem.

If there is a quota on Freon or a permit issued by the Government, we are not in a position financially to bid against large corporations. That would make, having a Freon machine which runs about $400,000, a very bad piece of equipment for us to have. We would lose our throughput, the price of shrimp would go up, and the price of shrimp is expensive enough.

We sell a 6-ounce bag of shrimp in the supermarkets for about $1.85. Once it goes over $2, people stop buying it, stores discontinue it, and we lose business. Shrimp is 75 percent of our business.

To put in a new freezer, if we had to put in a new freezer, a CO_2 or a nitrogen freezer, would cost us roughly about one-quarter of a million dollars. That is not the cost, which is not included in the record, of changing the packaging equipment so it could take shrimp that is all clumped up. We might even have to pack by hand, which would increase the price more.

Shrimp is basically what we sell. We have a fish line.

In our industry, in the cooked shrimp industry, most of the companies are roughly our size, sales anywhere from $10 million to $15 million a year.

On our other line, the battered fish which you see in the supermarkets, we are dealing against some pretty heavy hitters, as we put it, the major food conglomerates in the United States. If we don't have shrimp, it is very hard for us to sell fish.

Just to conclude on my testimony, I just think before any regulation is passed that says that there is a hardship up in the environment, I think those people who say ought to be made to prove it, so that there won't be a hardship down here for small businessmen, like me, who always seem to get hurt when these kinds of things are passed.

I thank you.

[Mr. Randazzo's prepared statement follows:]

PREPARED STATEMENT OF JOHN RANDAZZO, PRESIDENT, BRILLIANT SEAFOOD, INC., BOSTON, MASS.

Good morning. My name is John Randazzo. I am President of Brilliant Seafood, Inc. Brilliant Seafood is a small family-owned concern in Boston which specializes in the cooking and distribution of shrimp in various markets in North America. We have 50 people in our employ. To briefly outline our fast freezing process, peeled and deveined shrimp arrives at the factory, is cooked, individually quick frozen and packaged into retail and institutional packs.

We utilize Food Grade Chlorofluorocarbon 12 to freeze the cooked shrimp product. To put it simply, for us there is no alternative freezing method for the following reasons:

First, our product is packaged on automatic packaging equipment which consist of a sophisticated array of very sensitive electronic scales. In order for this machinery to operate each shrimp must enter this device individually frozen. Liquid CFC–12 provides this medium because as the shrimp enter the CFC freezing tunnel they land on a large pan where the freezant is applied directly to the product instantly freezing each individual piece.

Other alternative freezing mediums such as Liquid CO_2 or Nitrogen do not freeze the product instantly. Therefore the product clumps together in solid chunks. They also tend to create clumps of ice. Such items, when passed through our current packaging machinery, would disrupt the process and make packaging shrimp inefficient. In processing an average of four million pieces of shrimp a day this would lead to serious cost consequences.

In the case of mechanical refrigeration systems other problems would occur. Because of the sensitivity of shrimp, freezing must be done with a minimum amount of moisture loss. With mechanical freezing the moisture loss is increased and the shrimp dry out which has an adverse effect on the quality of our product.

Second, there is an energy advantage in using CFC as a freezing medium. Because the process is selfcontained, much of the CFC can be recovered and used again. As far as I know the recovery factors in using CO_2 or Nitrogen are almost nil. To freeze 20,000 lbs. of shrimp requires 350 lbs. of CFC. This same amount of shrimp requires 20,000 lbs. of CO_2 to reach the equivalent frozen state.

Third, since most of our produce is sold to consumers in polybags in the retail supermarket, pieces of shrimp frozen into clumps, or a product with a moisture loss would not make for an appealing one at either the store or home usage level. Shrimp instantly individually frozen in the CFC medium, lock in the flavor and moisture that, in our opinion, enhance the quality of the product. With shrimp prices at the level they are today our company could ill afford the effects on quality which, in our opinion, these other alternate mediums would demonstrate.

Fourth, to replace CFC with another freezing mechanism would cost $200,000 and take 8–10 weeks to effect. As a small businessman I would be out of business if this occurred.

Lastly, all the costs that would be incurred by Brilliant Seafood as a result of regulation of CFC would be passed on to the consumer. At a time when the seafood industry must come to grips with educating the consumer on the value of seafood an increase in its price will not help that cause.

For these reasons I have come to you as a small, private business firm and as a member of the Alliance For Responsible CFC Policy to state my opposition to the EPA's proposed regulation of chlorofluorocarbons. All I ask is that real hard core proof be supplied to prove that CFCs will cause hardships up there, before regulations are enacted that will cause definite hardship down here, for me the small businessman, who always seems to get hurt the worst when these things occur.

Mr. LUKEN. Thank you, Mr. Randazzo.

Mr. Begin.

TESTIMONY OF DAVID BEGIN, SOLVENT REPACKAGER, MILLER-STEPHENSON CHEMICAL CO., DANBURY, CONN.

Mr. BEGIN. Yes. I would like to make a correction on the agenda. Miller-Stephenson Chemical Co. is listed as a solvent manufacturer. Actually, we are a solvent repackager. We do not manufacture any solvents.

My name is David Begin, and I represent Miller-Stephenson Chemical Co. of Danbury, Conn. Miller-Stephenson is a member of the Alliance for Responsible CFC Policy.

We serve a small, but specialized and essential market—solvent market—and this market includes the critical use of high purity cleaning agents and specialty chemicals in the electronics, biomedical, communications, aircraft, aerospace, and defense industries. A listing of our U.S. Government customers will be supplied for the record. Our Miller-Stephenson solvent cleaners have as a base CFC F–113, completely nonflammable, pure, stable chemical with the lowest toxicity rating of any solvent in the industry.

Although used in complex, high-technology cleaning, F–113 is also gentle enough to be used directly on the skin in hospital operating room procedures. It is the safest organic solvent known for workers to handle, store, and transport. There is a solvent comparison list for details on solvent safety that I will submit for the record.

High purity F–113 solvent was first employed by the guidance instrument industry because of its safety, stability, and broad compatibility with complex materials of construction. It is considered the industry standard of purity, used where reliability and cleanliness must be assured in critical final cleaning.

F–113 is used in such critical cleaning applications as cardiac pacemakers, satellite communication systems, missile guidance systems, aircraft navigation instruments, and life support monitoring

equipment. Other cleaning applications are included on the listing submitted for the record.

[Lists referred to in previous paragraphs follow:]

LISTING OF MILLER-STEPHENSON CUSTOMERS—U.S. GOVERNMENT

Anniston Army Depot, Anniston, Alabama, Fort Rucker, Ala.
AF 40, Marshall Space Flight Center, Ala.
Marine Corps Air Station, Yuma, Ariz.
Alameda, Alameda, Calif.
Marine Corps Supply Center, Barstow, Calif.
Beale Air Force Base, Calif.
Naval Weapons Center, China Lake, Calif.
U.S. Naval Ordnance Lab., Corona, Calif.
U.S. Information Agency, Dixon, Calif.
NASA Flight Research Center, Edwards, Calif.
George Air Force Base, George AFB, Calif.
Sharpe Army Depot, Lathrop, Calif.
11th CG District, Commander, Long Beach, Calif.
Veterans Administration Hospital, Long Beach, Calif.
Naval Supply Center, Long Beach, Calif.
Veterans Administration Hospital, Los Angeles, Calif.
DCASR, Los Angeles, Calif.
American Forces Radio & TV, Department of Defense, Los Angeles, Calif.
March Air Force Base, March AFB, Calif.
U.S. Geological Survey, Menlo Park, Calif.
U.S. Naval Air Station, Miramar, Calif.
National Aeronautics & Space Ames Research Center, Moffett Field, Calif.
Naval Supply Center, Oakland, Calif.
Veterans Administration Hospital, Palo Alto, Calif.
U.S. Naval Air Station, Point Mugu, Calif.
USNCBC, Port Hueneme, Calif.
Sacramento Army Depot, Sacramento, Calif.
U.S. Dept. of Justice, Metro. Correctional Center, San Diego, Calif.
U.S. Naval Electronics Lab., San Diego, Calif.
Veterans Administration Hospital, San Diego, Calif.
Supply Officer NELC, San Diego, Calif.
Naval Air Station, San Diego, Calif.
Navy Public Works Center, San Diego, Calif.
Supply Officer USS Prairie, San Diego, Calif.
Supply Officer USS Kitty Hawk, San Francisco, Calif.
Supply Officer USS Hector, San Francisco, Calif.
12th Coast Guard District, San Francisco, Calif.
Naval Supply Center, FPO San Francisco, Calif.
General Services Administration, San Francisco, Calif.
Naval Station, Presidio of San Francisco, Calif.
Sacramento ALC/ACFSB, McClellan AFB, Calif.
U.S. Coast Guard, Terminal Island, San Pedro, Calif.
U.S. Naval Weapons Station, Seal Beach, Calif.
Veterans Administration Hospital, Sepulveda, Calif.
NASA JFK Space Center, South Vandenberg AFB, Calif.
Federal Correctional Institute, Terminal Island, Calif.
Defense Depot, Tracy, Calif.
ACFM, Travis AFB, Calif.
Marine Corps Base, Twentynine Palms, Calif.
S.O.U.S. Navy School Command, Vallejo, Calif.
National Bureau of Standards, Boulder, Colo.
U.S. Bureau of Reclamation, Denver, Colo.
Fitzsimens General Hospital, Denver, Colo.
U.S. Geological Survey, Denver, Colo.
USAF Academy, USAF Academy, Colo.
Lowry Air Force Base, Lowry AFB, Colo.
Peterson Field, Peterson Field, Colo.
U.S. Naval Submarine Base, Groton, Conn.
Naval Underwater Systems Center, New London, Conn.
Veterans Administration Hospital, West Haven, Conn.
Air Force Base, Windson Locks, Conn.
Procurement Supply Officer, Washington, D.C.

Chief Procurement Section, Washington, D.C.
U.S. Secret Service, Washington, D.C.
Drug Enforcement Administration, Washington, D.C.
Commonwealth of Australia, Air Attache, Washington, D.C.
FBI, Washington, D.C.
Federal Communications Commission, Washington, D.C.
U.S. Naval Research Lab., Washington, D.C.
Property & Supply Officer, Washington, D.C.
U.S. Information Agency, Washington, D.C.
National Bureau of Standards, Washington, D.C.
Bolling Air Force Base, Washington, D.C.
Marine Barracks, Washington, D.C.
Washington Navy Yard, Washington, D.C.
Washington Technical Institute, Washington, D.C.
U.S. Naval Oceanographic, Washington, D.C.
Naval Air Station, Cecil Field, Fla.
ADTC/ACF, Elgin Air Force Base, Fla.
NAS, Jacksonville, Fla.
NASA–JFK Space Center, Kennedy Space Center, Fla.
U.S. Naval Air Station, Key West, Fla.
Veterans Administration Hospital, Miami, Fla.
USCG District Seven, Miami, Fla.
Naval Training Center, Orlando, Fla.
Naval Coastal Systems Lab, Panama City, Fla.
Patrick Air Force Base, Patrick AFB, Fla.
Naval Air Station, Pensacola, Fla.
Tyndall Air Force Base, Tindall AFB, Fla.
Naval Air Station, Yukon, Fla.
Marine Corps Supply Center, Albany, Ga., Fort McPherson, Ga.
Robins Air Force Base, Robins AFB, Ga.
Veterans Administration Supply Depot, Broadview, Ill.
Procurement Property & Supply, Chicago, Ill.
Department of the Army Engineers, Chicago, Ill.
Veterans Administration Supply Depot, Hines, Ill.
Veterans Administration Hospital, Danville, Ill.
FCC, Park Ridge, Ill.
Rock Island Arsenal, Rock Island, Ill.
Naval Weapons Support Center, Crane, Ill.
Naval Avionics Facilities, Indianapolis, Ind.
Jefferson Proving Ground, Madison, Ind.
McConnell Air Force Base, McConnell AFB, Kans.
U.S. Dept. of Agriculture, New Orleans, La.
Aberdeen Proving Ground, Aberdeen Proving Gd., Md.
Harry Diamond Labs., Adelphi, Md.
Naval Ship Research & Devel. Ctr., Annapolis, Md.
National Institute of Health, Bethesda, Md.
Naval Ship Research & Devel. Ctr., Carderock, Md.
Fort Meade Procurement Division, Fort Meade, Md.
U.S. Army Joint Support Command, Fort Ritchie, Md.
National Aeronautics & Space Adm., Greenbelt, Md.
Naval Ordnance Station, Indian Head, Md.
U.S. Naval Air Station, Patuxent River, Md.
Veterans Administration Hospital, Perry Point, Md.
National Oceanic & Atmospheric Adm., Rockville, Md.
Naval Surface Weapons Center, Silver Spring, Md.
N.O.A.A. Weather Bureau, Silver Spring, Md.
A.F.C.R.L.-A.G. Hanscom Field, Bedford, Mass.
Department of Transportation, Cambridge, Mass.
Natick Development Center, Natick, Mass.
U.S. Postal Service, Springfield, Mass.
Army Materials Research Agency, Watertown, Mass.
U.S. Geological Survey, Woods Hole, Mass.
U.S. Postal Service, Detroit, Mich.
K. I. Sawyer Air Force Base, K. I. Sawyer AFB, Mich.
U.S. Army Engineer WES, CE, Vicksburg, Miss.
General Services Administration, Kansas City, Mo.
Fort Leonard Wood, Fort Leonard Wood, Mo.
1840 AB WG (ACF), Richards-Gebaur AFB, Mo.

Bureau of Reclamation, Billings, Mont.
Petty Cash Officer, Offutt AFB, Neb.
Bureau of Reclamation, Boulder City, Colo.
Environmental Protection Agency, Las Vegas, Nev.
Veterans Administration Center, Reno, Nev.
Pease Air Force Base, Pease AFB, N.H.
Portsmouth Naval Yard, Portsmouth, N.H.
U.S. Coast Guard Recruit Training Ctr., Cape May, N.J.
Picatinny Arsenal, Dover, N.J.
Fort Monmouth, Fort Monmouth, N.J.
U.S. ERDA, New Brunswick, N.J.
FAA Airport Control Tower, Newark, N.J.
FAA Administration, Federal Aviation Administration, Pomona, N.J.
Naval Air Propulsion Test Center, Wildwood, N.J.
U.S. Coast Guard Electronics Engr. Center, Wildwood, N.J.
Holloman Air Force Base, Holloman AFB, N. Mex.
AFSWC, Kirtland Air Force Base, N. Mex.
White Sands Missile Range, White Sands, N. Mex.
Post Office Department, Albany, N.Y.
U.S. Post Office—Procurement & Supply, Buffalo, N.Y.
Embassy of the U.S. of A., APO New York.
National Aeronautics & Space Administration, New York, N.Y.
U.S. Naval Station, FPO New York
USS Fulton, FPO New York
Veterans Administration Hospital, New York, N.Y.
U.S. Atomic Energy Commission, New York, N.Y.
Veterans Administration Hospital, Northport, N.Y.
Seneca Army Depot, Romulus, N.Y.
U.S. Post Office, Syracuse, N.Y.
U.S. Army Watervliet Arsenal, Watervliet, N.Y.
U.S Military Academy, West Point, N.Y.
Marine Corps Base, Camp Lejune, N.C.
Marine Corps Air Station, Cherry Point, N.C.
Seymore Johnson Air Force Base, Goldsboro, N.C.
Environmental Protection Agency, Research Triangle Park, N.C.
Bureau of Reclamation, Bismarck, N. Dak.
Grand Forks Air Force Base, Grand Forks, N. Dak.
Veterans Administration Hospital, Brecksville, Ohio.
HEW PHS CDC HIOSH, Robert A. Taft Labs., Cincinnati, Ohio.
Navy Finance Center, Cleveland, Ohio
Veterans Administration Center, Dayton, Ohio.
Ohio Air National Guard, Mansfield, Ohio.
Newark Air Force Station, Newark, Ohio.
ACFSB, Wright Patterson AFB, Ohio.
FAA AC-21, Oklahoma City, Okla.
U.S Forest Service, Portland, Oreg.
Bonneville Power Administration, Portland, Oreg.
U.S. Dept. of Agriculture, Portland, Oreg.
U.S. Army Engineer District, Portland, Oreg.
Veterans Administration Hospital, Portland, Oreg.
Letterkenny Army Depot, Chambersburg, Pa.
U.S. Navy Ships Parts Center, Mechanicsburg, Pa.
New Cumberland Army Depot, New Cumberland, Pa.
Frankford Arsenal, Philadelphia, Pa.
Defense Supply Agency, Philadelphia, Pa.
U.S. Naval Hospital, Philadelphia, Pa.
Philadelphia Naval Shipyard, Philadelphia, Pa.
U.S. Postal Service, Philadelphia, Pa.
Veterans Administration Hospital, Pittsburgh, Pa.
AFB 6381, Greater Pittsburgh Airport, Pa.
Tobyhanna Army Depot, Tobyhanna, Pa.
U.S. Naval Development Center, Warminster, Pa.
Naval Underwater System Center, Middletown, R.I.
Naval Supply Depot, Newport, R.I.
U.S. Naval Supply Center, Charleston, S.C.
Tennessee Valley Authority, Chattanooga, Tenn.
Veterans Administration Hospital, Memphis, Tenn.
Naval Air Station (Memphis 84), Millington, Tenn.

Veterans Administration Hospital, Nashville, Tenn.
Purchasing and Contracting, Fort Bliss, Tex.
Federal Aviation Administration, Fort Worth, Tex.
Lackland Air Force Base, Lackland AFB, Tex.
U.S. Postal Service, San Antonio, Tex.
Veterans Administration Hospital, San Antonio, Tex.
Red River Army Depot, Texarkana, Tex.
Webb Air Force Base, Webb AFB, Tex.
Dugway Proving Ground, Dugway, Utah.
Defense Depot, Ogden, Utah.
U.S. Bureau of Reclamation, Salt Lake City, Utah.
Veterans Administration Hospital, Salt Lake City, Utah.
U.S. Coast Guard, Washington Radio Station, Alexandria, Va.
Arlington Hall Station, Arlington, Va.
U.S. Naval Weapons Lab., Dahlgren, Va.
USAMERDC, Fort Belvoir, Va.
USATCFE, Fort Eustis, Va.
National Aeronautics & Space Administration, Hampton, Va.
USS L. Y. Spear, Norfolk, Va.
U.S. Public Health Hospital, Norfolk, Va.
Naval Air Station, Norfolk, Va.
Federal Reformatory, Petersburg, Va.
U.S. Dept. of the Interior, Geological Survey, Reston, Va.
Defense General Supply Center, Richmond, Va.
General Services Administration, Special Projects Unit, Springfield, Va.
NAS Oceana, Virginia Beach, Va.
National Aeronautics & Space Administration, Wallops Island, Va.
Department of the Army Security Agency, Warrenton, Va.
Warrenton Training Center, Warrenton, Va.
U.S. Naval Weapon Station, Yorktown, Va.
U.S. Naval Torpedo Station, Keyport, Wash.
U.S. Naval Air Station, Oak Harbor, Wash.
Naval Facility, Pacific Beach, Wash.
U.S. Naval Station, FPO Seattle, Wash.
Camp Smedley Butler USMC, FPO Seattle, Wash.
Bonneville Power Administration, Spokane, Wash.
Veterans Administration Hospital, Spokane, Wash.
Federal Prison Industries, Sterilacoon, Wash.
Walla Walla District Corps of Engineers, Walla Walla, Wash.

LIST OF COMMON SOLVENTS, THEIR TOXICITY AND FLAMMABILITY IN COMPARISION WITH SOLVENT F–113

	Toxicity (TWA in ppm) [1]	Flash point (tag closed cup) °F
F–113 (Trichlorotrifluoroethane)	1,000	None
1,1,1-Trichloroethane	350	None
Trichloroethylene	100	None
Stoddard Solvent	500	105
Isopropyl Alcohol	400	56
Ethyl Alcohol	1,000	57
Cellosolve®	25	107
Acetone	1,000	0
Methyl Ethyl Ketone (MEK)	200	28
Methyl Isobutyl Ketone (MIBK)	100	64
Ethyl Acetate	400	24
Benzene	10	12
Toluene	200	40
Xylene	100	80

[1] 8-hour time weighted average (OSHA).

LIST OF TYPICAL CLEANING APPLICATIONS FOR MILLER-STEPHENSON PRODUCTS

Optical Instruments
Laser Devices
Telephone Switching Terminals
Video Recorders
Microcomputers
Data Entry Terminals
Billing and Accounting Machines
Calculators
Industrial X-ray Equipment
Motor Controls
Patient Monitoring Systems
Medical Diagnostic Equipment
Analytic Research Instruments
Electronic Test Equipment
Cardiac Pacers
Power Supplies
Electronic Cash Registers
Semi-conducter Circuits
Teletype Printers
Tape Recorders
Aircraft Navigation Systems
Television Cameras and Receivers
Phototype Setting Equipment
Seismic Recorders
Nuclear Instruments
Automotive Electronics
Cable TV Components
Facsimile Terminals
Mobil Transmitters and Receivers
Telecommunications Modems
Photographic Cameras and Enlargers
Satellite Communication Systems
Missile Guidance Systems
Sonar Transducers
Gyroscope & Servo Systems
Motors and Generators
Alarm and Signal Systems
Electronic Memories
Digital Panel Instruments
Special Industrial Machinery
Jet Engine Development & Repair
Digital Tuning Devices
Loran Navigational Systems
Electronic Weighing Systems
Radar (airborne, ground, marine)
Data I/O Terminals
Pollution Monitoring Systems
Process Control Systems
Optoelectronic Devices
Microwave Systems
Data Processing Systems

Mr. BEGIN. In a totally different application, chlorofluorocarbon F-113 is used in hospital operating rooms to degrease skin presurgically, replacing an extremely dangerous solvent. In this case, the same chemical used to clean electronic components is packaged aseptically, tested for bacteria, and has FDA approval.

Prior to a surgical incision, the skin surrounding the operative site must be degreased to improve the adhesion of sterile drapes. Should these drapes slip during surgery, bacteria may penetrate the open wound resulting in possible postoperative infection.

For several years, diethyl ether was used as a presurgical skin cleaner. However, in recent years, this high explosive and flammable chemical was banned from the operating room due to the alarming incidence of operating room explosions and fires. It was approximately 1 in 150,000 incidence rate at that time.

Today, diethyl ether has been replaced by nonflammable F-113 which is marketed by Miller-Stephenson under the trade name of "Freon Skin Degreaser." Without F-113, hospitals would be left without any effective substitute.

In our 25th year of business, Miller-Stephenson, with less than 100 employees, serves over 10,000 customers using small quantities of CFC's for critical cleaning applications, and this is including 500 hospitals and medical centers. Approximately 80 percent of our company revenue is generated from the sale of CFC solvents. In addition, we have established foreign markets in 10 countries.

In the event of a cap on CFC production, prices will, by design, increase and availability will be held constant at best. Therefore, we will not be able to meet the CFC demands of our expanding markets. A production cap on CFC's would seriously affect our company by restricting our sales, and since the proposed regulation is unilateral, we would immediately lose all foreign markets due to the artificial price differential which would be created. It has taken us 10 years to build those foreign markets.

Many of our customer applications are critical, and there are no safe substitutes available.

How, for example, do we restrict the number of operations requiring "Freon Skin Degreaser" or restrict F-113 cleaning of electronics components in pacemakers or defense communication systems? This is the dilemma a production cap will create.

Mr. LUKEN. Thank you, Mr. Begin.

You have read the EPA ANPR on CFC's, right?

Mr. BEGIN. Yes, sir.

Mr. LUKEN. What is your understanding as to how this would work out? EPA would not go into a full allocation system, but the Agency would go into an economic incentive allocation with the use of permits for users. How would that mechanically work out, as far as you are concerned?

Mr. BEGIN. In reading the advance notice, it is somewhat confusing, because there are so many options which are still available, it is uncertain as to which route would be taken should any type of regulation come about.

Assuming that there would be a permit situation, there is no——

Mr. LUKEN. Permit for what, a manufacturer?

Mr. BEGIN. No. Again there are options, I think, which are still left available, either a permit to produce or a permit to use. If we were to buy permits to use, there would be absolutely no consideration given to whether an application is critical or not.

We would be competing for a 4-ounce bottle of Freon with people who are purchasing fluorocarbons for large refigeration systems and air-conditioning units of hotels or skyscrapers.

There is absolutely no priority given as to the use. It is strictly permit purchase system, the way that I understand it.

The other thing which is not covered is——

Mr. LUKEN. An auction of some kind?

Mr. BEGIN. An auction of sorts, yes, in which a permit would be purchased.

Mr. LUKEN. Then what would the Government do with the proceeds from the auction?

Mr. BEGIN. I don't think that that has been addressed, to the best of my knowledge.

Mr. LUKEN. Well, we will ask the EPA, but they say they will use it to finance the transfer payments. I am not sure I understand that. I just wonder if you do?

Mr. BEGIN. No; I don't really understand it.

Mr. LUKEN. What are the transfer payments?

Mr. BEGIN. The production costs, I believe. Except for inflation of production costs, it would remain constant. There would be a windfall from the difference between the production costs and the sale cost that would be auctioned upward.

Where that windfall would go, and what it would be used for, I have no idea.

Mr. LUKEN. It would have the effect of increasing the cost.

Thank you, Mr. Begin.

Mr. Smith.

TESTIMONY OF CLAY SMITH, COAL CLEANING PROCESSOR, OTISCA INDUSTRIES, LTD., SYRACUSE, N.Y.

Mr. SMITH. Good morning. I am Clay Smith, the president of Otisca Industries, a New York-based company employing 31 persons. We very much appreciate the opportunity to appear before the committee today and to discuss this issue which is of critical importance to our company.

Otisca is principally involved in developing, constructing, and servicing systems for removing known pollutants from coal. We have nearly completed construction of our first major coal cleaning facility, a 125-ton-per-hour plant built for the American Electric Power Co. in Beverly, Ohio. Otisca-processed coal is also being used as a fuel in General Motor's new coal-powered Cadillac El Dorado.

There are two points that I would like to make. First, if the EPA denies us chlorofluorocarbons, our company would be forced to liquidate. Second, the continuing uncertainty over what course of action EPA will ultimately take with respect to CFC's has made it most difficult for us to persuade those interested in our systems to purchase them.

Turning to the first point, Otisca has developed one of the most efficient and economic methods for cleaning sulfur and ash from coal. In a closed system, raw coal is placed in a bath of CFC's. The coal floats to the surface while the more dense mineral matter and pyritic sulfur sinks to the bottom. Coal recovered from this CFC bath can, in some cases, meet EPA's clean air standards for new boilers and, in others, dramatically reduce the sulfur and ash load that would be delivered to afterburner scrubbers.

There are many other types of coal cleaning techniques which do not use CFC's, but none is as efficient and economical as the Otisca process. For example, water scrubbing, the most widely used system, is inherently incapable of removing much of the pyritic sulfur which may be present in a particular seam of coal.

Equally important, because the Otisca process is self-contained, it avoids several environmental penalties associated with water scrubbing. Instead of discharging large volumes of contaminated so-called black water into settling ponds, the process is characterized by ultraefficient recovery and recycling techniques allowing nothing ecologically detrimental to escape.

Finally, extensive research has disclosed no viable alternative to CFC's as a parting liquid. To remain competitive, Otisca must continue to have access to large quantities of moderately priced CFC's.

As is readily apparent from the foregoing, the Otisca process clearly has the potential of making a significant contribution to our Nation's environmental program at a time when far greater demands are being placed on coal for power generation. Prohibiting coal from being cleaned in this manner on the basis of highly questionable theories regarding ozone depletion would thus, in our view, be a disservice to the American people.

Concerning our second point, Otisca is regularly approached by coal producers and coal users who are interested in purchasing our services in order to meet clean air standards or to utilize coal more efficiently. Although our systems are less costly than conventional ones, their construction and maintenance still require a great deal

of money. Some potential customers have been reluctant to make the capital outlays necessary to install a facility until they are confident that EPA will not move against CFC's but rather in a direction that is predictable.

The capital cost of a typical Otisca process coal cleaning plant or plant that has the capacity of 500 tons an hour is approximately $15 million. Of that $15 million, approximately $10 million is invested in that equipment which recovers the CFC's for reuse on incoming coal, and also improves the economics of the process.

Our operating cost per ton of raw coal is approximately $2. Of that $2, depending on the coal, the cost of the CFC's varies from 15 to 30 percent of the $2.

Capital, in our view, will not be invested in one of our process plants until this issue is resolved. And until it is resolved, the technique cannot be established so that an investor can predict his operating cost or even the very availability of the process fluid that is the heart of the system.

There is no question that this certainly must be resolved if Otisca is to survive. It is for this reason that we found particularly distressing EPA's decision last year to initiate rulemaking, based not on hard scientific data, but on a suspicion that CFC's may deplete stratospheric ozone.

In our view, neither our national environmental goals nor our energy objectives will be well served by preventing CFC's from being used to clean coal.

Thank you.

Mr. LUKEN. I thank you very much, Mr. Smith.

I think the testimony of this panel has served to buttress the points made by the previous panels. It has also given us the idea of the breadth of the application of CFC's in industry and commerce in this country.

Beyond that, I don't have any particular questions. Does the staff have any questions?

Mr. DALTON. If I may, one question.

Mr. Smith, it seems, if I understand you correctly, in your coal cleaning operations, you could be considered one of the best available technology, if you will, items in the cleaning of coal so that it can be used in an environmentally sound manner.

Now it would seem that you have got this nice process on the one hand, and on the other hand, EPA is trying to take that ability away from you so that we end up, in a sense, with a left hand that doesn't know what the right is doing over at EPA.

Would you agree with that?

Mr. SMITH. I think I would have to express an individual opinion in responding to that. I presume that the EPA sees their mission fundamentally focused on environmental matters. Perhaps in pursuing the environmental aspects of whatever subject there is at issue with them, they may not have the same emphasis in my case as perhaps the Department of Energy or some other division whose mission was to try to find efficient, acceptable ways of providing energy for the Nation.

Perhaps the emphasis, if I understood the question correctly, varies between two organizations.

Mr. DALTON. You don't use the CFC's once, and then throw them away, do you?

Mr. SMITH. We recover virtually all of them. Our losses are extremely low. As I mentioned in trying to divide up what the capital cost of a plant was, the amount of effort that is necessary to fully recover them is approximately 60 percent of the capital cost of one of our plants.

Mr. DALTON. How many times do you use the same bath?

Mr. SMITH. I have never really calculated it, but it would be an extremely high figure, because it takes about—one has to submerge 1 ton of coal in about 4 or 5 tons of the liquid.

When we remove it from the bath, most of that liquid drains back into the bath, and there is a little left on the surface of the solids that we have to vaporize in an evaporator. We then collect those vapors and compress them and condense them. Then we retain them to wet the incoming coal, in order to wet it with the liquid again.

Virtually all of it is recovered. There are some inefficiencies in the process, there are some losses. We project our losses to be in the range of half a pound per ton of coal in most applications, and certainly in all under 1 pound of coal.

Mr. LUKEN. Thank you very much.

Thank you, gentlemen.

I wonder if we could now move to the Environmental Protection Agency. We are running a little short of time and I want to make sure that we get the EPA representations in before we run acutely short of time.

We have Edward A. Klein, Director of the Chemical Control Division, Office of Pesticides and Toxic Substances, of the Environmental Protection Agency.

We have your statement which, without objection, will be received into the record, so you may proceed.

TESTIMONY OF EDWARD A. KLEIN, DIRECTOR, CHEMICAL CONTROL DIVISION, OFFICE OF PESTICIDES AND TOXIC SUBSTANCES, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY DR. MICHAEL SHAPIRO, CHIEF, REGULATORY IMPACTS BRANCH

Mr. KLEIN. Thank you. I am pleased to be here this morning on behalf of EPA.

Sitting beside me is Dr. Michael Shapiro, who is our Chief Economist and Chief of the Regulatory Impacts Branch.

I am especially anxious to clear up any misconceptions about what EPA has done regarding nonaerosol CFC uses.

Mr. LUKEN. OK, but I hope you will address what EPA has done and what EPA threatens to do.

Mr. KLEIN. I will be happy to indicate to you where we stand now in response to your questions.

Mr. LUKEN. That is exactly it. Thank you.

Mr. KLEIN. I would like to briefly review the history of EPA's involvement in the CFC issue and describe EPA's efforts to evaluate the possible economic impacts of various control actions.

Over the past several months we have talked with many small businessmen and have gained some appreciation for many of their

concerns. We are aware that small businesses may be vulnerable to cost increases, CFC availability, and other factors. Often it is difficult to obtain data and information to assist us in defining the needs of small businesses and mitigating impacts on them. To alleviate this, we always welcome information from small businesses and suggestions on ways to improve our evaluation of their situation.

CFC's are a family of chemicals that have found extensive use as aerosol propellants, as foam-blowing agents, as heat transfer media in air-conditioning, refrigeration, and fast food freezing, as solvents and as chemical intermediates.

In the mid-1970's, atmospheric modeling studies were conducted indicating that continued world CFC emission may lead to about a 7-percent future depletion in stratospheric ozone. The range of the estimate was from 2 to 20 percent. Since stratospheric ozone limits the amount of ultraviolet radiation reaching the Earth's surface, there was concern that damage to the ozone layer may cause adverse biological effects.

After receiving an assessment of the theory by the National Academy of Sciences in 1976 and regulatory recommendations by the Interagency Task Force on Inadvertent Modification of the Stratosphere, and after holding public hearings, FDA and EPA prohibited nonessential aerosol uses of CFC's in the United States. EPA decided to regulate aerosol uses separately from nonaerosol uses because substitutes were readily available for most aerosol applications, while alternatives for many nonaerosol uses were difficult to identify at the time.

The 1977 amendments to the Clean Air Act required additional research and assessment of the ozone depletion issue. In response to these requirements, the National Academy of Sciences published its second major assessment of the CFC problem in December 1979. It estimated that 16.5 percent was the most probable value of the steady-state depletion if 1977 emission levels were maintained, although the depletion level could range from 5 to 28 percent. This estimate has been reduced as of May 1981 to between 5 and 8 percent based on recent revised chemical reaction rate data. A contract was signed on May 1, 1981, with the National Academy of Sciences to provide a new assessment by the end of this year which will be provided to Congress along with EPA's biennial report on research relevant to stratospheric ozone protection.

Total CFC production and use has changed dramatically in the last decade. In the United States, a sharp drop in CFC production followed a peak of over 1 billion pounds in 1974. Use has leveled off recently to about 835 million pounds in 1980. This general decline masks a large decrease in aerosol CFC use, which dropped from about 500 million pounds in 1974 to less than 25 million pounds in each of the last 2 years. This was accompanied by a significant increase in nonaerosol CFC use during the same period. Nonaerosol use grew about 9 percent from 1975 to 1979 and then fell slightly in the recent recession. Recovery of the automobile and construction industries, combined with expected market growth in the use of CFC solvents, food freezing, and other applications may lead to a 5-percent annual growth rate and an eventual increase in production over the 1974 levels.

In October 1980, EPA issued an ANPR—advance notice of proposed rulemaking. It is important to emphasize what an ANPR is and what it is not.

First, and let me emphasize this, it is not a rule. It is not even a statement by EPA that it will regulate CFC's now or in the future; rather, it is an information-gathering tool which, in this case, notified the public that EPA was concerned about the projected growth of CFC's and possible resultant effects on human health and the environment. EPA is now considering the question of whether it should issue a proposal to regulate nonaerosol CFC's. Before any final rules could be promulgated, EPA would have to issue a proposal, including supporting analysis, and provide an opportunity for public comment. As you know, the final rule would have to be based on the record in the proceedings.

EPA has received over 2,000 comments to that ANPR, and it is clear that many segments of industry consider the strategies discussed in the ANPR to be quite controversial. The Agency's technical staff believes that many of the issues raised in these comments deserve further analysis, and EPA is evaluating these issues through its staff and contractors. The quality of the comments received indicates that the ANPR has succeeded in promoting informed public participation in the evaluation of the issues and development of appropriate governmental and industrial action.

Unfortunately, there appears to have been considerable misunderstanding as to the ramifications of the ANPR and its relationship to possible future rulemaking. For example, we have been called by concerned businessmen who believe that EPA has already proposed a rule to ban nonaerosol uses of CFC's. In the extreme case, a businessman called me and asked me why we had in fact banned CFC's. After discussion with these people, they have been quite relieved when we have explained to them that the ANPR is only that, and explained its relation to the rulemaking process.

Through EPA's coordination with the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the Department of Transportation and other involved agencies, academia, and industry researchers, we are keeping abreast of new developments in scientific research. The Agency has not decided whether to pursue a proposal or not, and if it did, what the nature of that proposal might be. A decision on EPA's future approach on CFC's will be made after the Administrator and other new senior officials have had an opportunity to study the issues, the scientific findings, and the available alternatives.

I would like to turn my discussion to the economic analyses which have been undertaken by EPA.

In 1977, EPA began its examination of the economic implications of regulating CFC emissions from nonaerosol applications. We contracted with the Rand Corp., to study each industry sector in detail. We were uncertain as to how much control of CFC's might be advisable. To provide a possible range for initial consideration, we decided to compare the relative cost of specific use-related controls such as product bans and technology requirements with a production restriction.

The Rand analysis took about 3 years. It represented EPA's initial effort to accumulate as much information as possible about

the CFC-user industries. The study presented a profile of all the major sectors that use CFC's in their production process and concluded that specific use-related controls could not accomplish the same degree of control as a production restriction could, and that for any given level of control, a production restriction policy would be cheaper in terms of societal resources.

A production restriction would cause the price of CFC's to rise. This price increase could be manifested in a variety of ways, but the result is that a restricted supply and growing demand would cause CFC prices to rise and provide an economic incentive for firms to reduce CFC emissions, conserve CFC use, or find alternatives to CFC's.

Rand was awarded two other contracts in September 1980; a task order on one of these contracts asks Rand to assess the alternative approaches for implementing production restrictions. The primary concerns in the analysis are the effects on competition, the distribution of profits among various industry sectors, and the impact on small businesses.

The Rand Corp., did an extensive analysis of the economic implications of the production cap on user industries. They project that in the absence of a regulation, the overall demand for CFC's would grow approximately 5.3 percent per year between 1980 and 1990.

With a production cap, supply of CFC's would not increase; instead, the price of CFC's would gradually rise over the decade. Price increases would encourage the use of substitutes and the conservation of CFC's so that the actual demand would equal the amount supplied. No one would be denied access to CFC's; rather, some end users would switch to substitutes or would install recycling and recovery systems because it would be economical to do so at the higher CFC prices.

Thus, industry sectors which have alternatives to CFC's would limit their use of CFC's, allowing the remaining sectors to continue purchasing these chemicals. In this way, consumption in the final product areas might continue to grow. Rand projected that shortages would not occur; CFC's would be available, although at gradually increasing prices.

Rand forecasted future CFC increases and attempted to determine their effects on the major sectors that use CFC's. Rand's analysis to date suggests that most sectors would not be adversely affected, although there are some areas of concern.

I would like to summarize these findings as they relate to the air-conditioner and refrigeration equipment manufacturing sectors, the industries which service air-conditioning and refrigeration equipment, the flexible foam industry, CFC solvent use, and thermopolystyrene foam manufacturing.

Air-conditioning and refrigeration equipment manufacturers do not have any reasonable alternatives to CFC's. Rand expects these users would continue to purchase CFC's even as prices increase. However, it is anticipated that these rising costs of production would not significantly affect these industries because CFC's represent a small percentage of the final product price.

For example, by 1990 a production cap at 1980 levels would cause the price of a home refrigerator to increase by $7, the price of a home freezer to increase by $9, and the price of a mobile air-

conditioning unit to increase by $6. These costs are expressed in constant 1976 dollars. Since any expected price increases are estimated to be minimal, the impact on each user industry should be small. According to Rand, firms in each product sector would face the same input cost and technology options and, with few exceptions, small firms would not be at a disadvantage. Further, Rand believes cost increases would be passed on to consumers.

The refrigeration and air-conditioning service industries and mobile air-conditioning service industries are characterized by numerous small firms. CFC's are an important input for these firms and an increase in CFC prices would cause a significant increase in their service charges.

Mr. LUKEN. Mr. Klein, may I interrupt for a moment?

Mr. KLEIN. Sure.

Mr. LUKEN. It is about time for recess. We have been going since 9:30, we have another panel, and I would not want to abbreviate the opportunity for me to ask questions. Perhaps the congressional Members of the panel who have been called away to ask questions will want to recess.

Is your schedule such that you could come back at 1:30?

Mr. KLEIN. I will adjust my schedule to whatever you need, sir.

Mr. LUKEN. All right. Well, then, I think this is a logical time to recess. We will allow you to finish your statement at 1:30, and then there will be some questions for you. I think your testimony and our review of your submitted statement would indicate that the EPA is substantially treating the questions that the panel and the people in the various industries have addressed. We want to give ourselves an opportunity to get into the issue and to discuss it with you.

So we will recess this hearing until 1:30 and pick up right where we left off. Thank you very much.

[Whereupon, at 11:55 a.m. the subcommittee recessed, to reconvene at 1:30 p.m. the same day.]

AFTERNOON SESSION

Mr. LUKEN. This session of the Subcommittee on Antitrust and Restraint of Trade Activities Affecting Small Business of the Committee on Small Business will reconvene at this time.

Mr. Klein, I apologize for interrupting you in midrhetorical flight before. But perhaps we will have more continuity now if you want to finish your comments, and then we will go into any questions we might have.

Mr. KLEIN. Thank you, Mr. Chairman.

As I was saying, for mobile air-conditioning, the price of CFC's currently represents approximately 10 percent of the charge for servicing the air-conditioner. The cost increase attributable to the regulation, in 1976 dollars, would be $6.60 per 3-pound charge by 1990. Although servicing is recommended annually, a CFC charge is only required if a leak exists within the system.

A similar situation prevails for refrigeration and air-conditioning. Thus, it appears that the price of CFC represents a relatively small percent of the overall costs of air-conditioning or refrigeration paid by the customer over the lifetime of the unit.

Rand believes that the flexible foam industry would implement recovery and recycling technologies and would also switch to substitute chemicals. The cost of the recovery and recycling equipment does not appear to vary significantly with the size of the plant. Thus, smaller plants could be at some cost disadvantage.

It is anticipated that CFC use as a solvent would decline. There are several alternative solvents available. Recovery and recycling of CFC's would also be expected in the electrical industries. The impact of higher CFC prices on the final price of electrical equipment would be expected to be minimal, as in the case of refrigeration and air-conditioning equipment. This is because the cost of solvent cleaning represents a very small percentage of the final product price. Rand projects that these costs would be passed on to consumers without adversely affecting demand.

Another product area which would be expected to significantly reduce CFC use over the decade is thermopolystyrene packaging foams. Recovery and recycling technologies would be expected to be utilized within the entire rigid foam sector, as well as alternative blowing agents.

However, rigid packing foams is the one area that Rand expects might be seriously affected by a production restriction. End products, such as egg cartons and fast food packages, can be made from CFC blown foam or from cardboard and paper products. The overall market for packaging materials would be expected to grow over the next decade, but the Rand study suggests that foam packaging could decline substantially as its price rises relative to nonfoam packaging.

In summary, the economic analysis performed by Rand suggests that, for the most part, firms in business today should be able to remain in business if the restrictions on CFC production that have been evaluated were implemented. The foreseeable technological responses could take place within existing plants through replacement, modification, or additions of some equipment, or through conversion to alternative chemicals.

We have identified certain industry sectors where small businesses could have their competitive positions adversely affected. These would be largely in the flexible foam industry and in the thermopolystyrene foam industry. EPA is continuing to assess both the nature and extent of these potential impacts and the possible mechanisms for mitigating them should future regulation be necessary.

Let me assure you that EPA is extremely sensitive to the needs of small businesses and that these needs will be carefully considered, not only with respect to CFC's, but for all matters addressed by EPA.

To facilitate the participation of small businessmen in rulemaking proceedings, the Agency frequently holds public hearings on proposed actions in cities throughout the country. We also consider the use of exemptions, less stringent requirements, financial assistance, and longer compliance times for small businesses.

For example the pretreatment standard in the electroplating industry specified a less stringent requirement for firms discharging less than 10,000 gallons per day. The new source performance standard for perchloroethylene exempted coin-operated dry clean-

ers and laundromats which are all small firms. We will continue to be concerned with how any regulations affect small business, and we will continue to make every possible effort to mitigate impacts on those least capable of complying.

Let me reiterate that the Agency has not yet decided whether to undertake rulemaking on nonaerosol uses of CFC's. Any such decision would occur after the Agency's Administrator and other new senior staff have had the opportunity to fully consider the available information and potential options.

Mr. LUKEN. Thank you, Mr. Klein.

In your statement, you indicated that the ANPR—the advanced notice of proposed rulemaking—is not a rule. I believe you say it is not even a statement that EPA will regulate CFC's.

I would be almost tempted to say, what is it?

Mr. KLEIN. I think——

Mr. LUKEN. Since you have indicated what it isn't, is it nothing?

Mr. KLEIN. It is an information-gathering tool. As my testimony indicated, we got——

Mr. LUKEN. Well, you wouldn't issue it if you weren't thinking about it just slightly, would you?

Mr. KLEIN. Certainly it was being considered. But it is not the same thing as saying that it is a promise that EPA will go regulate.

Mr. LUKEN. The ANPR addressed alternatives for regulation rather than the need for regulation. The issues that you brought up in the ANPR were almost completely addressed to regulation or alternatives for regulation, but not at all focused on the need for regulation.

Mr. KLEIN. As I indicated before, we received a very large number of comments. Those comments addressed not only the need for regulation, but many of them argued against regulation. And the issues that were raised in the comments ranged from the most detailed type of scientific information to economics and impacts on businesses.

In that sense, we think it was important to get all of this type of information out into the public arena. The industry treated the ANPR very seriously.

Frankly, one of the main things we are doing now is sitting down and analyzing those comments. They contain a significant body of information. The comments, as I suggested before, were very detailed and are being taken very seriously.

Mr. LUKEN. They took it seriously because they felt threatened, right?

Mr. KLEIN. I think that is probably correct.

Mr. LUKEN. You are not suggesting they haven't been threatened, are you?

Mr. KLEIN. Well, I think that some businesses view any statement by a Federal agency as a promise to come forward and regulate.

Mr. LUKEN. I think Mr. Williams would agree with that.

Mr. KLEIN. What I am saying, and I hope that the message is coming across clearly, is that we are not promising to regulate. What we are doing at this point is analyzing the information, trying to base decisions on sound science and thorough analysis.

Mr. LUKEN. What we are trying to do at this first hearing is to get some information, so I don't want to appear to be berating at any time. But I do want to bring up some issues and talk about the appearances of what is happening and talk about what EPA and other Government sectors have done.

The IMOS you mentioned in your testimony was originated in 1974. Is that correct? IMOS is—are you ready for this—the Interagency Task Force on Inadvertent Modification of the Stratosphere. That is seditious on its face, isn't it? [Laughter.]

Anyway, that started in 1974.

Mr. KLEIN. Right.

Mr. LUKEN. Now we are here representing, among other things, the cause of small business. As I understand it, a representative from the Small Business Administration was not added to the IMOS until November 1980, about 1 month after the ANPR was issued.

Mr. KLEIN. I don't want to cop out, but——

Mr. LUKEN. That is all right. As I say, I want to bring up some things that you may want to cop out on.

Mr. KLEIN. IMOS was a scientific group. I came to the agency in October of 1980, and one of the first things that happened was I got a call from—I can't remember the gentleman's name at the Small Business Administration who asked to be put on the CFC committee of the Interagency Regulatory Liaison Group [IRLG] and we made arrangements for him to be put on the committee.

Mr. LUKEN. Well, I wouldn't say that was copping out. I would say that was pleading guilty, as far as EPA is concerned. They haven't even thought of small business on this issue for 6 years.

Mr. KLEIN. I don't know what the background is.

Mr. LUKEN. They didn't even think of it then, but SBA brought it to their attention. That is a very significant omission: the consideration of small business interests in this interagency task force on inadvertent modification of the stratosphere.

Nonetheless, the interagency task force had been considering the CFC issue for some time prior to the ANPR, which was issued in October 1980. And during that time, the issue was being debated without any apparent contribution by small business.

Mr. KLEIN. The facts speak for themselves.

Mr. LUKEN. One of the questions is the following: SBA is only one representative of small business; was there any other representative of small business on the interagency task force that you know of?

Mr. KLEIN. I am not aware of the composition of that. But again, let me emphasize that the IMOS was a one-time scientific group that has been disbanded for several years.

Let me also indicate that there is a CFC committee of the Interagency Regulatory Liaison Group which provides interagency coordination of the CFC issues. I am sorry to throw more alphabet soup at you.

Mr. LUKEN. That is not as bad as the last one.

Mr. KLEIN. On that group, which is composed of the various Federal health regulatory agencies, there is a representative from the Department of Commerce for small business on that group.

There is also a representative from the Small Business Administration.

Let me also say that I think that hearings of this type are a good learning experience for us, because it does reinforce the needs of small businesses.

Mr. LUKEN. OK. Let us hope it is a good learning experience for all of us.

You say that a contract with the NAS was signed in May 1981, to provide a new assessment of the ozone depletion theory by December 1981.

Do you consider that study to be a thorough and encompassing one?

Mr. KLEIN. There has been a significant amount of scientific analysis conducted prior to the ANPR, and since that time. There was a major conference held recently in Hampton, Va. EPA recently convened a meeting of experts on the scientific issues.

So it is not a question of letting out a contract and expecting NAS to start from ground zero. We do not expect an immediate reaction to the issues. Rather, what we have here is a continuing long-term process of analysis which could reasonably update current knowledge by the end of the year.

Mr. LUKEN. I think maybe what you said was you already made up your mind and this study is just going through the motions.

Mr. KLEIN. No; I didn't say that. If that is what you perceived, let me correct that impression.

Mr. LUKEN. Well, I sort of had that impression before you said it. But I think that is what you said.

Mr. KLEIN. Let me clarify this.

Mr. LUKEN. My point is this: EPA has done all this work on CFC's, at least since 1974 up to October 1980, when the ANPR was issued. This action indicated that EPA is very concerned about what is happening in the stratosphere as a result of CFC's. Yet now you contract with the National Academy of Science for a study on CFC's and give the NAS about 7 months to work on it, which would not appear to be enough time to initiate a new study.

So it would appear, or at least there would be the suspicion that all NAS is going to do is to rehash the information you already have which is reflected in your ANPR. At least that is a concern.

Mr. KLEIN. That is not our intention.

As you know, EPA has to give Congress a biannual report on current research and scientific reports. The NAS study is not a new study. It is intended to provide a continuing update of this science as it is changing.

I would just like to reemphasize that this is not a signal that EPA is bent on proceeding with regulations in the CFC area. As I indicated, the Administrator and the new senior officials of EPA are going to carefully analyze the issues before making a decision.

Mr. LUKEN. Have you heard the previously mentioned criticism from the scientists, from specialists in the field, or specifically from the National Academy of Science?

Mr. KLEIN. I personally have not heard that. Perhaps they have voiced that objection. I really do not know.

Mr. LUKEN. Could you comment directly on the sequence of events? Do you really think that 6 or 7 months is enough time for NAS to complete a full and thorough study of this kind of issue?

Mr. KLEIN. I honestly don't know the answer to that. If the NAS feels that it is not an adequate amount of time I presume we would have the authority to extend that.

Mr. LUKEN. You presume you would. But they are to report by December 1981. I wonder if they presume that you would?

Mr. KLEIN. I can't speak for them, Mr. Chairman.

Mr. LUKEN. I would expect that they would not presume that. This is what their contract says: that they report by December 1981, unless a little bird tells them that they don't really have to, and that they really have more time than that.

Mr. KLEIN. Again, let me say that there have been continuing scientific studies—this is not a study that begins from scratch. There is a tremendous amount of scientific information that has been created. There was a recent major scientific conference that recently took place on these issues.

Mr. LUKEN. Yes, but for those small businesses out there, some of whom have testified today, and are concerned with the judgment that might be inferred, have wanted to take a completely new look at the ANPR issue. They are not reassured by a contract that says you only have 6 or 7 months in order to take a completely new look at it.

What may well be happening is the NAS has been given a contract and too little time to work. They are going to come back and reaffirm what EPA already has indicated. And with a lot of ballyhoo, EPA will issue this report and say this shows the information upon which our original ANPR was based and is now confirmed. This is our concern.

Mr. KLEIN. I understand the concern. That was not our intention. Let us go back and take a look at whether we think they actually can do a good analysis in that period of time.

Again, as I suggested before, NAS has a tremendous amount of scientific information on these issues. They are not looking at the information for the first time. But if, in fact, this is not a reasonable amount of time to have a fresh look at it, then we would consider changing that date. I can't tell you now whether it is a reasonable amount of time.

Mr. LUKEN. We will keep the record open by unanimous consent and await the report from the Environmental Protection Agency on the reasonableness of the report time frame.

Mr. KLEIN. Sure. We would be happy to.

Mr. LUKEN. We also want to know whether NAS could reasonably be considered having an opportunity within that short time frame to give an all-encompassing study and report; or, if not, what then is NAS able to do within that time?

Mr. KLEIN. OK. Again, let me emphasize our intention is not to rush science nor are we bent on issuing regulations, notwithstanding anything that may come out of this.

[Letter from EPA in response to questions raised during testimony follows:]

U.S. ENVIRONMENTAL PROTECTION AGENCY,
Washington, D.C., August 31, 1981.

Hon. THOMAS A. LUKEN,
Chairman, Subcommittee on Antitrust and Restraint of Trade Activities Concerning Small Business, Committee on Small Business, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: We appreciate the opportunity to respond to the questions raised by your Subcommittee on nonaerosol uses of chlorofluorocarbons (CFC's).

First, the Agency is currently reviewing your bill, H.R. 1853, which would amend portions of the Clean Air Act concerned with the ozone depletion theory and halocarbons. The issues raised in your bill are involved in our general review of the Clean Air Act. The Administration presently is preparing recommendations for change in the Clean Air Act.

Second, is the question of whether the National Academy of Sciences (NAS) can complete its new assessment of the ozone depletion issue by December, 1981. EPA signed a contract on May 1, 1981, with NAS to provide a new assessment by December, 1981, but we will be working with the NAS to provide a longer period of time in order to properly consider the latest technical information. The NASA/WMO workshop report is to be one of the working documents, plus any other reports the NAS deems relevant and important for the NAS assessment.

Third, is the question of what impact a CFC production restriction would have on the price of frozen food. At EPA's request, the Rand Corporation addressed the question of how a CFC production restriction at the 1980 level of production would affect the price of frozen food, using shrimp as an example. They concluded that by 1990 the price of frozen shrimp would increase by about five cents per pound. This five cent increase represents a substantial increase (more than double) in freezing costs but is only a small fraction of the total costs of bringing frozen shrimp to the marketplace. The increased freezing costs for other frozen food products are estimated to be in the same range. For instance, the increase in the cost of freezing raw meat patties and cooled pork patties would be about four cents and six cents respectively.

Fourth, is the question of the relationship of small business to further consideration of CFC issues. In order that the interests of small business might be more directly represented, we have included the Small Business Administration as a member of the Interagency Regulatory Liaison Group's Task Group on Chlorofluorocarbons.

Fifth, I am enclosing copies of the Rand Corporation studies on CFC's which you requested.

Finally, I am enclosing the corrected transcript of Ed Klein's appearance before your Subcommittee.

If I can be of further assistance, please contact me.

Sincerely yours,

LEWIS S. W. CRAMPTON,
Acting Director,
Office of Legislation.

Mr. LUKEN. I am sure we are not intentionally rushing it, but we may be accidentally doing so. Therefore we will take what ever action we can to avoid inadvertently rushing it, just like this unintentional modification of the stratosphere, which is being studied in the IMOS.

While I look at my notes, I think Mr. Williams has questions. Mr. Williams?

Mr. WILLIAMS. Thank you, Mr. Chairman.

I learned very shortly after I came here that some of those who represent the Environmental Protection Agency think differently than I do. I think this is going to come out here as we continue.

I just wonder if either of you gentlemen—I assume both of you are career people—really understand what we are trying to do here? Are you really caught up, like most EPA people that I have met, in this great cause that you have of saving all of our lives because we are not able to do that ourselves as a nation.

I would, first of all, like to begin my questioning by asking you, does this impact upon you at all, what is happening, what has been

told might happen as a result of your 7 months of work and your protection of us. Do any of these statements have any importance that would even come close to the cause that you represent?

Mr. KLEIN. Of course. A person would have to be either an idiot or a fool not to be concerned.

Mr. WILLIAMS. Thank you very much for that.

I guess I have a couple of questions. I know the answers, but I guess I have to ask them.

Dr. Shapiro, what is your function as far as your position with EPA? Are you sent here to report what is happening to the small business community and what impact regulations that you issue have upon our society?

Mr. SHAPIRO. Well, the function of our branch in general is to evaluate the economic consequences of alternative actions.

Mr. WILLIAMS. Is that as important as these reports that you are going to receive in 7 months, or will that just be something that you will have to overlook?

Mr. SHAPIRO. No; we consider our work to be as important as any other work that goes on within the Agency.

I think that the Agency is committed to evaluating its decision in the context of both the science and the economics of the alternatives.

Mr. WILLIAMS. Do you consider the concerns that have been pointed out here today as an environmental problem, something that may be happening to our society, hardships caused by regulation? Would you consider that an environmental problem of any type.

Mr. SHAPIRO. It is clearly a problem for society. I don't know whether you draw these boxes about what is an environmental problem versus an economic problem versus some other kind of problem.

Mr. WILLIAMS. You don't see them interrelated at all?

Mr. SHAPIRO. They are interrelated in that they affect the welfare of our society. If you want to encompass the environment within the entire welfare of the American society, yes.

Mr. WILLIAMS. Well, we are out into the stratosphere. I thought it might be nice if we would include the human race. That is all I am asking. Is that an environmental problem?

Mr. SHAPIRO. In that context, yes.

Mr. WILLIAMS. OK.

So, especially in the area that you deal with, this testimony here today I am sure you are going to carry back to your agency, and hopefully try to impress upon them that some of this apparently you didn't anticipate; is that correct? Or did you anticipate this happening?

Mr. SHAPIRO. Well, I think we anticipated getting a lot of information as a result of the ANPR. It is, frankly, very difficult for the Agency to gather information.

Mr. WILLIAMS. Well, you are doing it very quickly in one area, and with difficulty in the human area. That is something I think I was trying to point out as I began this.

But you will, of course, take this back and consider that as carefully as you will the reports that will be filed very quickly.

Mr. SHAPIRO. Could you repeat that question? I am not sure I——

Mr. WILLIAMS. The impact of this hearing, the testimony that the chairman, through his leadership, and those who participated, the impact of all that, you will consider and take back to the Agency, that will be reviewed as carefully as this report that you are going to receive dealing with the stratosphere and the effects.

Mr. SHAPIRO. Absolutely.

Mr. WILLIAMS. There was some concern this morning about the possible substitute. I don't believe I heard anyone say here this morning that they really opposed the effort to assure human life and the world as we know it and the stratosphere as we know that.

However, many of them said that there was no substitute now to make our environment a little more comfortable here, if we are talking about preserving our food or sleeping in our beds or cooling our homes or insulating our homes. Forget the economic impact, that is environment to me. It may not be to the Agency.

Do you or are you aware, either of you, of a substitute or an alternative for what you are proposing? Or is it just that whole hard-and-fast EPA rule, and you people worry about it later?

Mr. KLEIN. Let me say a couple of things. First of all, as I indicated before, the ANPR is not itself a proposal.

Mr. WILLIAMS. I understand that.

Mr. KLEIN. We have not actually proposed to do anything regarding nonaerosol uses of CFC's.

Mr. WILLIAMS. What would you call this?

Mr. KLEIN. This is an ANPR. It is viewed as an information-gathering tool. So that 2,000 people who commented would be able to have input into our process.

I can assure you that, not only did they comment——

Mr. WILLIAMS. Why didn't you come out and say everything was OK if you are not proposing a change? I have difficulty, as I said from the outset, understanding some of this philosophy. Now you are telling us maybe it is not that much to worry about. It is just a testing of the water in our society dealing with the stratosphere.

I don't believe that is the case, and I don't believe you intend to say that, do you?

Mr. KLEIN. There are different levels of analysis. For example, if we had absolutely no concern about a particular chemical we would not issue an ANPR.

Mr. WILLIAMS. So you have identified your concern; is that correct?

Mr. KLEIN. We identified a possible concern.

Mr. WILLIAMS. A possible concern?

Mr. KLEIN. We were seeking information to either confirm or to cast in doubt that concern.

Mr. WILLIAMS. But you have identified a possible concern in the Agency. That is terrific news. I think we all understand that.

And you have also identified the possible solution; is that correct?

Mr. KLEIN. We have identified several possible solutions. The purpose of the ANPR, and maybe we did leave a misimpression on this, the purpose of it was not to tell the world, "Here we come, we are going to regulate you." The purpose of the ANPR was to say that EPA has some concerns about ozone depletion. If these concerns are accurate, we are going to have to deal with them. The

ANPR stated some of the things we have in mind, and asked for comments, not only on the question of whether we should have a concern, but on the question of if there is a problem how should we deal with it.

Mr. LUKEN. Would the gentleman yield?

Mr. WILLIAMS. Yes.

Mr. LUKEN. To summarize, the information Mr. Williams is pursuing, and you are discussing, was given in a press conference statement by Barbara Blum, Deputy Administrator, back on April 15, 1980, in Oslo, Norway. We realize this was a previous administration, and this committee is certainly not going to accuse the present administration or EPA of necessarily following the policies of the prior administration. I am not throwing this up at you for that reason. However you are now essentially defending the actions that occurred back in 1980.

Let me read this statement which gives you an idea of at least what some of the concerns would be if the thinking in the ANPR persists in EPA. Here is what Barbara Blum said at that time:

> Imposing a production ceiling in the United States is neither the first nor the last step to control chlorofluorocarbons. In 1978, EPA and other U.S. Government agencies issued rules to phase out the aerosol propellant uses of this substance in products such as deodorants, pesticides and furniture polish.

Apparently this statement, and I don't see anything wrong with the context, indicates that Barbara Blum, Deputy Administrator of the EPA, was thinking very seriously about using this cap; Would you agree that this is true?

[Full statement referred to above follows:]

PREPARED STATEMENT OF BARBARA BLUM, DEPUTY ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY, AT INTERNATIONAL MEETING ON CHLOROFLUOROCARBONS, OSLO, NORWAY, APRIL 15, 1980

I am today announcing that the United States will propose limiting the production of ozone-destroying chlorofluorocarbons to our 1979 production level. We expect that this action will hold U.S. production to about 551 million pounds per year. The exact figure will depend upon detailed 1979 production information obtained from U.S. industry. Total worldwide chlorofluorocarbon production in 1977 was about 1,927 million pounds.

We in the United States are taking this step because of continuing studies showing that worldwide chlorofluorocarbon emissions jeopardize public health and the environment. For example, the most recent report by the U.S. National Academy of Sciences states that continued global emissions of chlorofluorocarbons, even if restricted to the 1977 level, most likely will lead to a 16 percent reduction in the earth's stratospheric ozone. Obviously, any growth above total world 1977 use levels will lead to greater ozone depletion. This, in turn, would create a 44 percent increase in the amount of harmful ultraviolet radiation reaching the earth's surface. Such radiation would lead to thousands of additional cases of human melanoma skin cancer—which often is fatal—and hundreds of thousands of additional cases of the non-melanoma variety. This radiation would also cut production of wheat, corn, soybeans, and rice and of commercially important fish such as anchovies, mackerel, shrimp, and crab.

In combination with effects predicted to occur as a result of increased combustion of fossil fuels, continued release of chlorofluorocarbons at current levels could also contribute to a potentially dangerous warming of the earth's atmosphere, altering climate and possibly even partially melting the polar icecaps.

Imposing a production ceiling in the United States is neither the first, nor the last, step to control chlorofluorocarbons. In 1978, EPA and other U.S. government agencies issued rules to phase out the aerosol propellant uses of the substance in products such as deodorants, pesticides and furniture polish.

The action I am announcing today conveys the urgent and deep concern of the United States about the threat chlorofluorocarbons continue to pose. Our country is

moving forward now because we believe that chlorofluorocarbons comprise one of the leading international environmental issues of the decade.

The results of our meeting here in Oslo these past two days assures that international progress toward protecting the ozone layer by controlling chlorofluorocarbons will continue. It must. Action by the United States or any other single country—regardless of how severe—will never eliminate the problem. Rapid, parallel actions by all chlorofluorocarbons producing nations are needed soon. Indeed, the other countries represented at this conference consider reducing chlorofluorocarbon emissions a desirable objective and agree to work toward comparable goals through whatever means are available.

Some nations have taken action. Sweden and Norway have banned the use of chlorofluorocarbons as aerosol propellants. Canada's ban on chlorofluorocarbon propellants will be effective this May. And at this conference, Canada welcomed the newest U.S. initiative and agreed to consider taking similar steps. The European Economic Community (EEC) recently endorsed a 30 percent reduction from 1976 levels of aerosol use for each of its nine member nations. This reduction is to be reached by June 1981. The EEC has also curtailed new investments in chlorofluorocarbon production facilities.

All in all, these are first steps. More are needed.

The issues involved to effectively control chlorofluorocarbons are complex. Nevertheless, the strong potential for serious health and environmental effects on a global scale dictates that we act. This conference is an important step towards achieving agreement by nations around the world to curb chlorofluorocarbons and the dangers they pose.

Mr. KLEIN. I can't comment on that because I am really not familiar with the comment other than what you just stated. I think it speaks for itself.

Mr. LUKEN. Well, I just bring it up so that everybody is aware of all the reasons why people are concerned that people deep in the bows of EPA might be seriously considering this cap. The ANPR proposal may be more than just a suggestion.

Thank you. I yield back.

Mr. WILLIAMS. Getting back to what I was saying, you have identified a concern and people from the Agency have identified possible solutions to the concern. In fact, they are valid enough that you proposed some type of comment, or asked for some type of comment on specific proposals dealing with the problem that we are discussing.

Do we agree so far?

Mr. KLEIN. Yes.

Mr. WILLIAMS. The ideal situation, obviously, let us take an easy one for me, in order to preserve meat and the food that we need, refrigeration is required to do that. I suppose the ideal situation that we could find somewhere in the depths of EPA files would be to go to the North Pole and truck ice down here. It is environmentally sound and there will be no damage to that unless the fumes from the cars or trucks getting it here will kill somebody.

I guess I am maybe going too far, but I get very upset about the logic of this Agency in the many things they do. I would like for you to tell me, where are these people supposed to turn?

I know that is not your job. It is not your problem. But it is the problem of our society. Where are they supposed to turn?

Mr. KLEIN. I understand the concern you are expressing. Let me talk a little bit about the Toxic Substances Control Act, because that act, unlike some of the other acts administered by EPA and some other agencies, deals with questions of unreasonable risk. Congress was not seeking through the Toxic Substances Control Act absolutely safety, absolute risk-free society.

What it was talking about was questions of unreasonable risk.

Now the difference between those two are very important, because I think what you are worried about is that we are trying to create a risk-free society.

Mr. WILLIAMS. What are you trying to create?

Mr. KLEIN. We are not.

Mr. WILLIAMS. No; I want your definition. You told me mine. You give me your definition. You are an employee of the Agency. What is the intent of the Agency? What are they trying to do?

Mr. KLEIN. Let me come back to the Toxic Substances Control Act. I think that provides a lot of useful information that is relevant to your question.

The question of unreasonable risk relates to a whole slew of issues besides questions such as: Is the ozone layer going to be depleted? It goes to questions relating to economics, questions like whether there are adequate substitutes. Everybody recognizes that you need refrigeration. I don't think that there is an agency in the Federal Government who would want to eliminate refrigeration.

Mr. WILLIAMS. Yes. But all of us have heard and all of us who sit in this room know, just looking at the proposal that has been put forth for comment, that you are not going to eliminate that. You are only going to cut it by two-thirds.

So we will have refrigeration. You have already covered yourselves in those areas. I am not impressed by you telling me, as a representative of the Agency, not personally, that, "Hey, everything is going to be all right."

But that is not the case when it comes down to the bottom line. We have impacted our environment in many, many other ways; would you agree with that.

Mr. KLEIN. Yes.

Mr. WILLIAMS. You have not removed the ability to refrigerate, have you, with your proposals? If these people would have all accepted it, you have not done that. They know that.

The problem is that three-fourths of them are out of business. The problem is there is a tremendous impact on our society.

Mr. KLEIN. That is the reason why an advance notice of this type, that notice has provided a wealth of very, very useful information of the type that you are raising now, the type that the people in these panels today have raised as well. I think it is really important to get that kind of information before the public.

As I said before, hearings like this are important not only from your perspective, but from our perspective as well, because it does increase our knowledge and understanding.

Mr. WILLIAMS. I would love to believe that, Mr. Klein. I would love to believe that. And I am going to take your word for it personally. But the Agency's record speaks for itself. They are not sensitive to the bottom line result in many of the decisions that are made. They have not been sensitive.

I think the statement read by the chairman indicates the intent of agency officials, not only in the past, but probably in the future. I firmly believe that all of us want to do the right thing. I think that you firmly believe that.

The point is: How far are we going to go with this? In my opinion, the EPA has done more damage to this country, economi-

cally and probably environmentally, than any agency that is here. That is my opinion. You don't have to agree. I am sure you don't.

But I have seen them in my own district. We are seeing them now impact on small businesses that are providing very essential services to our society.

But it wouldn't surprise me at all 7 months from now to see those regulations written and saying everything is going to be all right. You people deal with it.

Now if you are going to make some assurances that this input, this testimony, the concern of Members of Congress is going to make a difference, I would love to hear that. I have never heard it before since I have been here, in 3 years. And I have never seen it make any difference, because the philosophy and the mentality there does not even take into consideration the problems of the society. They have got this cause that they don't know what is good for them out there and we have got to protect them. That is my concern.

Now, again, if you can assure me, as Dr. Shapiro has indicated, he will take back the testimony presented here and bring it forth in discussion as you evaluate your data, I will accept that. But I am going to, as long as I can, try to point out that there are other considerations here, and none of these people, all of these people, I should say, are just as concerned about the ozones. None of them even tried to negate the concern. What do they do in the meantime until an adequate replacement is found? They don't even know whether or not a replacement will cost more.

The Agency just, hopefully, starting at your level, will begin to consider some of these things. I would like the assurance anyway, Mr. Chairman, that we will get some direct response from the two of you out of this hearing, some direct proof that you have presented what has taken place here and it is discussed.

Mr. KLEIN. I can assure you that we will bring this information back, all the information that you raised and that the panels have raised, and provide that information to the Administrator.

As I indicated in my testimony, decisions on how to deal with these issues are going to be made by the Administrator. I can't speak for her.

Mr. WILLIAMS. If you would, what would you say?

Mr. KLEIN. I wouldn't pretend to.

Mr. WILLIAMS. You say you understand what we are trying to say in the concerns of all these people. Do you think we are at the point in the EPA's position as an agency that we can become a little more sensitive as you indicated? Do you believe that is now the atmosphere in that agency in the discussions and the policies that they are looking at?

Mr. KLEIN. My personal opinion is yes. I can't——

Mr. WILLIAMS. You have been at the Agency since October 1980?

Mr. KLEIN. Yes, sir.

Mr. SHAPIRO. I have been at the Agency since July of 1980.

Mr. WILLIAMS. Well, Mr. Chairman, I don't believe I have any further questions. It is a very, very serious problem, as far as I am concerned. If you people are career people, and I am sure that while you have a cause I may not agree with it, you must also understand that, I think, as a result of some of the good work we

have destroyed a very, very valuable tool to deal with the overall long-range problem of keeping this world sound for human life, which is my goal.

I have seen the EPA protect people and I have seen a lot of human suffering develop out of that protection. I have no problem prioritizing at this point as a Member of Congress. I have been blacklisted by them and everything else, and it makes me very proud.

Mr. LUKEN. Thank you, Mr. Williams.

I wonder if I could change the subject for just a minute. I have introduced legislation which would prohibit the EPA from taking action with respect to regulations of chlorofluorocarbons until it determines that depletion of the stratospheric ozone by chlorofluorocarbons is at a rate which will eventually be harmful to human health and the environment.

I wouldn't put you on the spot by asking you to comment on that.

Mr. KLEIN. Thank you.

Mr. LUKEN. But I would like to ask you to refer this to the agency; to see if it has any comment on this standard as a permanent legislation guideline.

You don't have any comment at this time, do you?

Mr. KLEIN. I would prefer not to comment.

Mr. LUKEN. I didn't really expect that you would want to. I am not at all meaning to reflect on your capacity or ability to comment at this time. But it is a very serious consideration in the question of applicable standards. If the EPA would want to comment on that, it might be helpful to us in our legislative pursuits. So we will leave the record open for any comment that the Agency would have.

[See letter from EPA dated August 31, 1981, page 55.]

Mr. LUKEN. With reference to Deputy Director Blum's statement, in another letter by an EPA Assistant Administrator of April 2, 1980, this release states: "In the long term, further reductions will be necessary, possibly on the order of 50 to 70 percent reductions in the use from 1977 levels."

[Letter referred to above follows:]

STATEMENT OF STEVEN D. JELLINEK, ASSISTANT ADMINISTRATOR FOR PESTICIDES AND TOXIC SUBSTANCES, U.S. ENVIRONMENTAL PROTECTION AGENCY

As you may know, continued world emissions of chlorofluorocarbons appear to pose a significant threat to human health and the environment. As the principal Federal agency responsible for controlling CFCs, the Environmental Protection Agency (EPA) will represent the United States at an international conference in Oslo, Norway in mid-April. I am writing to inform you of the Agency's plans before they are discussed in an international forum.

EPA has relied primarily upon the National Academy of Sciences (NAS) for scientific review and evaluation of the ozone depletion theory. The latest information which NAS has provided[1] is that: continued emissions of CFCs at 1977 levels would eventually produce an equilibrium ozone depletion of 16.5 percent. Given present patterns of sunlight exposure, an ozone depletion of this magnitude is projected to induce several hundred thousand additional cases of nonmelanoma (generally non-fatal) skin cancer each year, and an additional several thousand new

[1] NAS, *Stratospheric Ozone Depletion by Halocarbons: Chemistry and Transport* (November 1979, Washington, D.C.).

NAS, *Depletion of Stratospheric Ozone by Chlorofluorocarbons* (December 1979, Washington, D.C.).

cases per year of melanoma (generally fatal) skin cancer. (These figures represent an approximate doubling of present incidence rates for these two types of cancers.)

The effects of ozone depletion are not limited, however, to skin cancer. NAS forsees a significant decrease in crop productivity for several agricultural species, possibly resulting in severe food shortages. Larval forms of several important seafood species would suffer appreciable killing at this level of ozone depletion. Finally, climatic effects would include an increase in the mean global temperature of a few tenths of a degree centigrade, a significant increase, by the year 2050.

It must be remembered that the effects outlined above are a consequence of continued world emissions at 1977 levels. In fact, world CFC use has already risen 10 to 20 percent since 1977, and is expected to continue to grow at a 7 percent annual rate until at least 1990. If so, an equilibrium ozone depletion of 32 percent is predicted to result from 1990 rates, with adverse consequences significantly more harmful than those outlined above.

The scientific models on which the theory is based have not been conclusively validated. NAS recognizes this when, in setting confidence intervals for its ozone depletion estimates, it projects a one in forty chance that ozone depletion resulting from 1977 world CFC release rates would be less than 5 percent and a corresponding one in forty chance that equilibrium depletion would eventually exceed 28 percent.

While the ozone depletion theory has not yet been observationally validated (such validation will not be technically feasible until mid-decade), we have confidence in the basic validity of the Academy's work and its projections for ozone depletion. We believe, therefore, that Agency actions to control CFCs would be fully justified by the present state of scientific knowledge.

We recognize that ozone depletio is a truly international concern, and further, that unilateral U.S. actions against CFCs would be fruitless. Although the U.S. is by far the largest CFC producer and user, we alone constitute only one-third of total use. We are working closely with the international community to achieve multilateral actions aimed at CFC control. To date the response has been fairly encouraging. In addition to the U.S., Sweden and Norway have banned CFC use as aerosol propellants, while Canada is about to implement a partial ban. The European Economic Community (EEC) recently endorsed a 30 percent reduction from 1976 levels in CFC aerosol use for each of its nine member nations, to be achieved by June 1981. Additionally, the EEC has curtailed new investment in CFC production facilities, effectively limiting future CFC use (albeit at a higher than present level). Further actions will be necessary to slow or eliminate growth in CFC use and eventually to reduce worldwide usage levels.

This Agency's position will be that 5 percent equilibrium ozone depletion should be considered the maximum tolerable level. This is approximately the lowest detectable level of depletion; a lower depletion level would not allow scientific validation of the theory, and would probably not be attainable in the near future. In addition, worldwide reductions in CFC use corresponding to a 5 percent equilibrium level could probably be attained without curtailing the most essential uses of CFCs, such as industrial and consumer refrigeration.

The Agency is considering limiting the production of virgin CFCs to present levels. This limitation would cover the major depleters (CFC 11, 12, 22, 113, 114, 115). The regulations will probably allow for changing production mixes of CFCs based on the ozone depletion potential of the CFCs involved (different CFCs have different ozone depletion potentials per pound).

In the long term, further reductions will be necessary, possibly on the order of 50 to 70 percent reductions in use from 1977 levels. At this level of reductions, most CFC users will be affected in some way, either by intensified conservation efforts or by conversion to a substitute chemical. It is anticipated that some uses, such as refrigeration, will not be affected significantly by these cutbacks.

We realize that much work remains to be done in all aspects of the CFC/ozone depletion dilemma. The government stratospheric ozone research and monitoring program is continuing unabated. We are working with the National Aeronautics and Space Administration, the Department of Energy, the National Oceanographic and Atmospheric Administration, the Department of Transportation and the National Science Foundation to improve and validate the atmospheric transport and chemistry models used. This work involves laboratory research on rate measurements and reactions, atmospheric measurements, and monitoring of biologically damaging UV-B radiation levels. Scientists are constantly refining the one dimensional models and simultaneously working on more sophisticated two and three dimensional models. EPA is sponsoring work on the health and biological effects of UV-B radiation, including effects on fisheries and vegetation.

Socio-economic impact assessment studies continue, such as the University of Maryland's work on cost/benefit analysis and the Rand Corporation's work to

update our knowledge of the technical and economic problems involved in reducing the use and emissions of CFCs. We are also funding work on technologies for control and recovery of CFC emissions.

I would like to acknowledge the contribution of all those industrial users who participated in the earlier work of the Rand Corporation. I hope that the cooperative spirit of that effort will continue and be extended to all our future work on CFCs.

I look forward to working with you toward resolution of this serious environmental problem, and remain willing to receive any questions or comments you may have.

Mr. LUKEN. Here again is an indication that those who were running the EPA last year were very serious about substantial CFC reductions, going beyond the cap that we have discussed before.

According to EPA's April 27, 1981 notice in the Federal Register, the final CFC rule was scheduled to be published in March 1983. Can you say as to what that schedule is at the present time?

Mr. KLEIN. I think it would be fair to say that we no longer have a schedule.

As I suggested, before any new schedules are established, the decision as to whether the Agency should proceed would first have to be made.

Mr. LUKEN. All right. So you say, in effect, the whole thing is up for reconsideration?

Mr. KLEIN. Yes.

Mr. LUKEN. Is that what you are saying?

Mr. KLEIN. Yes.

Mr. LUKEN. All right.

Just one other item that has been touched upon before. If the EPA does not abandon the ANPR and continues with a proposed rulemaking, how would the Agency consider the impact of the regulations on small business? If the rulemaking is terminated or even if the rulemaking process continues, the interagency task force which is involved in the CFC issue will continue to operate. We need some reassurance by EPA as to exactly how the agency is going to involve small business in these further considerations of the ongoing CFC studies.

So we will leave the record open for you to advise us on that score. Have I stated that clearly?

Mr. KLEIN. We will be happy to inform you about the involvement of small business in future consideration of the issues.

[See letter from EPA dated Aug. 31, 1981, page 55.]

Mr. LUKEN. We are interested in seeing established some clear-cut and meaningful small business involvement in the event that EPA continues to consider the CFC issue. If the Agency does not further pursue the ANPR on CFCs, then we would like to see increased and effective small business involvement on the continuing studies of the IMOS.

Does anybody else have anything?

Mr. DALTON. Thank you, Mr. Chairman.

First of all, Mr. Klein, I would like to know if you could possibly provide the committee with copies of the Rand Economic Assessment Study? Would you do that?

Mr. KLEIN. Yes.

Mr. DALTON. Thank you.

[Material referred to above retained in subcommittee files.]

Mr. DALTON. The second question is: Could you sort of justify the approach you took in the ANPR in light of the Reg Flex Act? What I am thinking of in particular is some testimony that we heard this morning wherein there was some concern that the big businesses in the field, such as Carrier or Tenneco or Firestone, would drive out small businesses because of the fact that the larger companies have a greater economic leverage and resources.

Mr. KLEIN. Rand has performed some analyses of that issue. Before I respond directly to your question let me reiterate that the Rand report is one piece of information in our record, in the record that is now being created. Information from today and the 2,000 more comments that we received, all that is information that is very, very important, that we consider very carefully.

When I talk about the Rand study, I don't want you to get the impression that we think the Rand study is the Bible, and no matter what anybody else says, we are only going to do what the Rand study suggests. I just want to make that clear.

The Rand Corp. conducted some analysis of the question. They found that the small businesses in a particular industry will compete not only against the larger businesses in the same industry, but also against all users of a particular type of CFC. Depending on how permits are made available and there are a wide range of options of how you make them available—there would be differing impacts on small businesses versus large businesses.

As a general matter, the competition would not be between big air-conditioning businesses and small air-conditioning businesses, but rather among all firms which wanted CFC's of a particular type. In order for a single big firm or a couple of firms banding together, to squeeze out the small businesses they would have to compete, not just with the air-conditioning industry, but with every industry. In essence, all the large companies related to all CFC's would have to band together to squeeze out all the small businesses.

I guess anything is possible, but the Rand report suggests that that outcome would be unlikely.

Mr. DALTON. Let me refer to your statement where you outline some of the increases in price in what I would sort of consider some big ticket items.

What I would like to know, however, is what might happen to, say, the price of frozen vegetables or frozen fish and have you even considered the inflationary impact that would cause in the economy when that price increase is passed on to a consumer?

Mr. KLEIN. I think I will let Dr. Shapiro answer that.

Mr. SHAPIRO. The Rand study did not address that particular segment, the price increases that would occur to those particular frozen products.

We would be happy to go through those calculations with Rand using their estimates and come back to you with those numbers.

Mr. DALTON. OK.

One other point, you state that the flexible foam industry could employ recovery and recycling technologies. From what we heard this morning from Mr. Bradley of North Carolina Foam Industries, the cost of employing those technologies would double the price of his plant.

What I would like to know is how can you possibly justify such a cost in light of the fact it is likely that it will not increase the productivity of that plant in any way?

Mr. SHAPIRO. The basic question you are asking is the general issue of whether EPA should proceed on any kind of path to regulate chlorofluorocarbons or any kind of environmental hazard where the society feels that there is some need to expend its resources to prevent or control the hazard. We are in effect using up resources and, therefore, decreasing productivity as it might be measured in, say, the gross national product.

On the other hand, we are doing that because we think we are getting benefits that outweigh those costs. So the issue with regard to that specific plant is, I think, the issue you are really raising is the broader question of whether CFC regulation is appropriate at this time.

Mr. DALTON. Well sort of what I am asking is, we have heard from Mr. Bradley, and if I recall correctly, his figures were about $1 million to $1.5 million that he would have to invest in his plant. If he is going to make that investment and not get any return on it, that is a tough way to do business for a small businessman.

Mr. SHAPIRO. Well, if he cannot pass on—you are saying if he can't pass on the cost of his equipment——

Mr. DALTON. He can probably pass on the cost of it, but it is going to take him a good long while to see that million bucks get back into his pocket. At 20 percent prime, you are asking that man to go out there into a market and raise that sort of money, and I am wondering really if you can justify that, placing that burden on a small businessman?

Mr. SHAPIRO. Well, I think the ultimate justification is again a decision for the Administrator of the Agency. I think, in that particular case, we have identified that particular industry segment and especially small producers in that industry segment as an area that would be substantially affected by a possible production cap. We have identified that as a potential adverse impact of small business. That information, together with the information we have gathered today, and information from responses to the ANPR, will go into the Agency's decisionmaking process.

Our job is to make sure that those kind of economic impacts are identified and incorporated into whatever decisionmaking process the Agency engages in when developing its final decisions as to whether to proceed with regulatory activity.

In my branch, it is not our job to say whether it is worth this cost. Our job is to state what we think the cost will be and identify the types of businesses that we think will be affected.

In this particular case—I don't know the specifics of the individual plant, but we have identified this market segment as one that could be substantially affected.

Mr. DALTON. Yes.

Has EPA made any efforts either to fund or to some way assist in research which might identify economically feasible alternatives for some industries presently using CFC's?

Mr. SHAPIRO. Well, not to engage directly in scientific research. The Rand Corp. has another contract with our Agency to identify technologies or chemicals that are available and promising avenues

of development in order to assist in this process of learning what alternatives are available.

As far as I know, and I am speaking only from my direct knowledge, we are not funding any scientific research in developing substitutes or recovery systems for CFC's.

Mr. DALTON. Are you identifying the economic feasibility of those alternatives and the amount of time it would take to get a substitute technology into the marketplace?

Mr. SHAPIRO. As part of our economic analysis, we normally consider both those things.

Mr. DALTON. OK.

Mr. SHAPIRO. I just learned that we sponsored a demonstration project on recovering and recycling CFC's from foam flowing.

Mr. DALTON. Thank you, Mr. Chairman.

Mr. LUKEN. Thank you very much, Mr. Klein and Dr. Shapiro. We appreciate your testimony. It has been very, very helpful. Thank you.

PANEL CONSISTING OF GLEN C. RAGER, CHARLES RIZZUTO, AND DAVID N. FREEDMAN

Mr. LUKEN. Now we will conclude the hearing for today with the Food Distribution Panel. This panel includes Mr. Rager, Mr. Rizzuto, and Mr. Freedman.

Mr. Rager, of Rager's Country Butcher Shop in Van Wert, Ohio. Welcome. Any Ohioan is especially welcome here.

You may proceed, Mr. Rager.

STATEMENT OF GLEN C. RAGER, RAGER'S COUNTRY BUTCHER SHOP, VAN WERT, OHIO

Mr. RAGER. Mr. Chairman, I am Glen Rager, owner of Rager's Country Butcher Shop, Van Wert, Ohio, in the northwest corner of Ohio.

My father started the business 54 years ago. I have owned and operated the business for 27 years. Today, my son and son-in-law are in the management, along with 35 employees. I am also a farmer.

I do custom work for farmers, sell sides and quarters of beef for home freezers, have a large retail meat market, wholesale and curing of meats.

We must have refrigeration to cool the animals from the slaughter floor until it is in the hands of the consumers. Our processing rooms are also refrigerated to cut the bacteria count.

We do everything in the meat business. We need refrigeration 100 percent for everything we do. We have about 35 compressors, costing up to about $4,000 each.

I am here representing 17,000 meat plant operators like myself, mostly family owned and operated. We are proud of what we do and are doing a service for the consumers of our country.

I am here also on behalf of the American Association of Meat Processors, the largest meat organization in America.

When we first started in the meat business, we did not need refrigeration. We butchered only in the winter months and cooled the animals outside on a tree limb. After that, we used coolers cooled by ice. The ice was brought from a local pond.

But today we are not living in the good old days. We have a larger world to feed, and meat is shipped all over the world. There is just not enough ice in the pond, so now we use CFC. It is nontoxic, nonflammable, and odorless. The only harm you can receive from it is frostbite. Of all the CFC used in the world, the United States uses about one-third, leaving two-thirds of this use uncontrolled by all other countries. Most all of home freezers use Freon-12, and most air-conditioners use Freon-22.

One alternative is ammonia, which can kill you today, not 100 years from now. They tried to stop the use of ammonia many years ago in the meat business because it is dangerous and harmful to meat. I have used a lot of ammonia on the farm to produce corn. I have been unconscious twice from the fumes and burned several times.

Other alternatives are sulfur dioxide—very toxic; butane—something that is used in a lighter; and ethane—extremely explosive.

There are always those who want to bring attention to themselves. An example is Carol Forman, who almost put us out of the ham and bacon business when she caused a nationwide scare about nitrates. She also had no alternative. We personally lost 40 percent of our bacon sales because of this. It cost the pork industry billions of dollars. I was told she made a retraction, but no one seems to be aware of it. We were also told at that time, in place of the nitrates, you could use a freezer or put it in a refrigerator. Now they want to pull the plug from this refrigeration.

We of AAMP question:

What are you planning to use in place of CFC?

Who will pay for the tremendous cost of the changeover?

Will the Government pay for the changeover as was done in the car industry?

The cost of new gas, all new compressors, and labor for changeover would put many of the small processors out of business. I am talking of small processors on my behalf, we are the small, small businesses. We are talking in the neighborhood of $250,000 maybe to $3 or $4 million. I am in about $3.5 million.

I am not a college educated man, but I feel I do have commonsense, and so many environmental questions call for commonsense. I do not believe in banning the use of CFC at this time without an alternative, but to use commonsense.

Thank you for the opportunity to testify on behalf of AAMP and the 17,000 meat plants.

Mr. LUKEN. Thank you, Mr. Rager. Your testimony was very direct, and for that reason refreshingly helpful. Thank you.

Now I will ask for the Food Marketing Institute's representative, Mr. David Freedman. Mr. Freedman, I have your statement, and it will be, without objection, received into the record. You may proceed.

TESTIMONY OF DAVID N. FREEDMAN, CHAIRMAN, ENERGY COMMITTEE, FOOD MARKETING INSTITUTE, WASHINGTON, D.C.

Mr. FREEDMAN. Good afternoon, Mr. Chairman.

My name is David Freedman, and I am director of services for Giant Food. Giant operates 127 stores throughout Virginia, Maryland, and the District of Columbia.

However, today I am here representing the Food Marketing Institute as chairman of its Energy Conservation Committee. FMI is a national nonprofit trade association representing over 1,000 food retailers and wholesalers. Over one-half of FMI's members operate just one grocery store; 83 percent are independents operating 10 or fewer; and all the chains are also members.

When EPA issued its proposal for restricting production of CFC's, FMI's Energy Conservation Committee met to assess the technical and economic effects of the restriction. Our committee is composed of both large and small companies. When we pulled our information together, we found that the EPA proposal would have a significant effect on both small and large companies, with similarly required engineering changes and resulting costs per store. The only difference, or the main difference between the smaller and larger companies is that larger companies multiply the cost by more stores.

Let me briefly explain our main concerns with the CFC proposal:

First, CFC's are used by supermarkets as the refrigerant to preserve perishable food. There is no alternative refrigerant which combines economy, energy efficiency, and safety. The only technical substitute is ammonia, which is highly toxic, explosive, and flammable and, therefore, is really not a suitable alternative.

Second, by placing a cap on production, EPA is creating an artificial scarcity. Artificial scarcities tend to create hoarding and work to the benefit of large users with purchasing power. In 1976, the food retailing industry used less than 4 percent of the total national CFC consumption. In 1990, the Rand Corp., projects supermarket usage of 1.5 percent.

No matter how much control EPA maintains on allocating production or use, there is no guarantee that supermarkets, small users, will have immediate access to CFC's needed to preserve perishables. Availability will be an even greater concern for the small corner grocery store.

Our third main concern is cost. But before we explain cost, we must describe usage. The refrigeration system in a typical new food store needs 1,500 to 2,000 pounds of refrigerant to start operating. An existing store replaces 100 to 300 pounds of refrigerant a year due to leakage. For both new and existing supermarkets, about one-half of the total refigerant initially installed or leaked is refrigerant No. 12, a relatively inexpensive CFC which EPA considers a major ozone-depleting gas. The rest of the refrigerant is the lesser-depleting but more costly CFC's, refrigerant Nos. 22 and 502.

Supermarket refrigeration systems are designed to use specific types of CFC refigerant. Therefore, an EPA requirement to convert to lesser depleting refrigerants would involve not only changing the refrigeration system—compressors and their controls, piping, expansion valves—but would require the substituting of a more expensive refrigerant. The changes required in replacing such equipment in an existing store are extensive, time consuming and costly.

FMI estimates a minimum cost of $35,000 to $45,000 per store to convert each existing supermarket to lesser depleting CFC refrigerant, as you can see in the chart submitted for the hearing record.

[Chart referred to above follows:]

EPA REGULATORY IMPACT ON

IN-STORE REFRIGERATION OF RETAIL FOOD INDUSTRY

PER STORE COSTS OF
CONVERTING EXISTING SUPERMARKET
REFRIGERATION FROM R-12 TO LESS
DEPLETING CFCs

Engineering Redesign	$ 1,000
Expansion Valves	2,000
Compressors	10,000
Compressor Controls	5,000
Piping Changes	3,000
Trucking & Freight	3,000
Labor	10-20,000
New Refrigerant	1,000
Disposal of R-12	UNESTIMATED
TOTAL COSTS	$35,000-$45,000 per store

TOTAL RETAIL FOOD INDUSTRY COSTS
FOR CONVERTING IN-STORE REFRIGERATION*

33,600 Existing Supermarkets[1]	$1.176 Billion at $35,000/store	$1.512 Billion at $45,000/store
1,500 New Supermarkets[2]	$7.5 Million at $5,000/store	$10.5 Million at $7,500/store
101,175 Small Food Stores[3]	UNESTIMATED	
34,125 Convenience Stores		
TOTAL ESTIMABLE COSTS	$1.183 Billion - $1.522 Billion	

[1]Existing in December 1979; sales above $1 million/yr.

[2]Average annual number of new supermarkets built.

[3]Sales below $1 million/yr.

*THESE COSTS INCLUDE ONLY IN-STORE REFRIGERANT USES. THEY EXCLUDE COSTS INCURRED IN OTHER OUT-OF-STORE USES.

Mr. FREEDMAN. Cost of redesign and CFC's for new stores is estimated at $5,000 to $7,000 per new store. Again, both large companies and small companies will incur these costs.

The resulting cost to the supermarket industry, then, is a minimum of $1.2 to $1.5 billion. These figures are stated as minimums because data is unavailable on the very small food stores and convenience stores and also because the cost of CFC's was calculated on current price levels.

If we also add on the costs of equipment changes in refrigerated distribution centers, processing plants, and trucks, as well as the inefficiencies of non-CFC-based insulation in our refrigerators, the cost to the retail food industry will likely reach $2 billion.

Although a small user of CFC refrigerants, supermarkets will incur severe economic costs. We therefore welcome this hearing and have appreciated the opportunity to present this information.

Thank you.

Mr. LUKEN. Thank you, Mr. Freedman.

You stated that of the total national CFC consumption supermarkets used 4 percent in 1976 and are projected to use 1.5 percent in 1990. Why the reduction in usage?

Mr. FREEDMAN. This information was gained from the Rand report that was mentioned before.

Mr. LUKEN. Do you have any idea why there should be any reduction?

Mr. FREEDMAN. Yes, because the Rand report projects there would be totally fewer supermarkets—there will be a decline in the number of small supermarkets, and an increase in the number of larger ones.

Mr. LUKEN. Larger, presumably with more freezers?

Mr. FREEDMAN. Yes.

Mr. LUKEN. You don't seem a bit surprised and I suspect that is because you know your business and we don't. Is the tendency going to be to conserve in these areas by using the larger supermarkets? Is that the way it works out?

Mr. FREEDMAN. As far as refrigerants are concerned, the trend in the industry is to go to larger systems.

Mr. LUKEN. Which are more energy efficient?

Mr. FREEDMAN. Which are more energy efficient. The old supermarkets had typically maybe 30 to 40 small compressors. A new supermarket may have five large compressors.

Mr. LUKEN. Thank you.

Mr. Rizzuto.

TESTIMONY OF CHARLES RIZZUTO, PRESIDENT, SOUTHLAND FROZEN FOODS, INC., GREAT NECK, N.Y.

Mr. RIZZUTO. Good afternoon, Mr. Chairman and staff.

My name is Charles Rizzuto, and I am president and chief executive officer of Southland Frozen Foods, Inc. of Great Neck, N.Y.

I am grateful for this opportunity to testify before you today on behalf of a small business which is virtually dependent on the continued availability at an economic price of CFC's. My company is a member of the American Frozen Food Institute, a nonprofit trade association, having in membership frozen food processors,

like ourselves, who together account for some 80 percent of the frozen food produced in this country.

Southland Frozen Foods is a small, privately owned business, employing approximately 1,000 people, and producing a wide variety of frozen foods and vegetables which are sold through retail and institutional outlets throughout the Eastern part of the United States.

I would like to point out that all frozen foods must be kept at zero degrees fahrenheit or below at all times. As such, my company relies entirely on CFC's for the maintenance of adequately cold temperatures throughout the total distribution cycle, which includes transportation, warehousing, display for sale in frozen food cabinets in supermarkets, and in-home refrigerators and freezers.

The same holds true for the whole of the frozen food industry, as well as the frozen and refrigerated meat industry, seafood industry, dairy and ice cream and produce industry, and every item of food which requires any temperature cooler than ambient temperatures for maintenance of a good, wholesome quality end product.

To reiterate this point, from the time the product leaves our packing plant in the different parts of the country to the time it is taken out of the refrigerator by Mrs. Consumer, virtually all the refrigeration required to maintain products at the necessary cold temperatures are provided by CFC's.

As has been pointed out earlier in the day, the available substitutes for CFC's as a refrigerant for the refrigeration equipment referred to above which are ammonia, methyl chloride, sulfur dioxide, methylene chloride, and others are all, in varying degrees, toxic, flammable, explosive, corrosive and/or thermally inefficient.

I have some remarks relative to the insulating industry, but those were well covered earlier in the day.

I would like to point out that in denying the refrigerated and frozen food industry the continued economic availability of CFC's is to throw the industry back some 50 years, in addition to making obsolete the hundreds of millions of dollars of CFC containing refrigeration equipment currently in use. The small businessman would be especially hurt in that he generally does not have the financial resources to purchase new or different equipment. He is more or less stuck with what he has.

It is our feeling that it is premature to regulate further and, furthermore, should action be required in the future, enormous regard should be given to the economic effect of any such regulation on the refrigerated and frozen food industry, on the food supply of the Nation, and the cost of that food supply, as well as the impact on the thousands of small companies such as Southland who are dependent on its availability.

Thank you for the courtesy of allowing me to express my concerns on a topic of great importance to me, our employees, customers, and American consumers.

Mr. Chairman, I would like to raise one more point that came up after hearing the gentleman's remarks from the EPA. We were of the impression that what was being talked about by the EPA was not only the reduction in the use of CFC's, but the eventual ban. I seem to have seen those words around, although I didn't hear them today, eventual ban of CFC's. That really got us alarmed that

sooner or later we would have to face that. And we do not have substitutes at this time.

[Mr. Rizzuto's prepared statement follows:]

PREPARED STATEMENT OF CHARLES RIZZUTO, PRESIDENT, SOUTHLAND FROZEN FOODS, INC., GREAT NECK, N.Y.

My name is Charles Rizzuto and I am president and chief executive officer of Southland Frozen Foods, Incorporated, of Great Neck, New York. I am grateful for this opportunity to testify before you today on behalf of a small business which is vitally dependent on the continuing availability at an economic price of chlorofluorocarbons (CFC's). My company is a member of the American Frozen Food Institute, a non-profit trade association having in membership frozen food processors who together account for some eighty percent of all the frozen food produce in this country.

Southland Frozen Foods, Incorporated, is a small privately owned business, employing slightly less than one thousand people, and producing a wide variety of frozen fruits and vegetables which are sold through retail and institutional outlets throughout the eastern part of the United States.

Let me point out that all frozen foods must be kept at zero degrees fahrenheit (−18°C) at all times, and as such my company relies entirely on CFC's for the maintenance of adequately cold temperatures throughout the total distribution cycle, which includes transport, display for sale in supermarket frozen food cases, and in-home storage of all our products. The same holds true for the entire frozen food industry, the frozen and refrigerated meat trade, the fishing industry, the dairy, ice cream and produce industry and indeed every item of food which requires any temperature cooler than ambient for maintenance of a good quality end product.

To reiterate my point, from the time the product leaves the packing plants until it is taken out of the refrigerator/freezer by Mr. and Ms. Consumer, virtually all the refrigeration required to maintain products at the necessary cold temperature (0°F at all times) is provided by CFC's.

The available substitutes for CFC's as a refrigerant in the refrigeration equipment referred to previously (ammonia, methyl chloride, sulphur dioxide, methylene chloride) are all, in varying degrees, toxic, flammable, explosive, corrosive and/or thermally inefficient.

In addition, CFC's are an essential ingredient—as blowing agents—in the most thermally efficient insulating materials. These rigid foam insulating materials are extensively used in freezer and cold warehouse construction, in refrigerated trucks and rail cars, retail display cases, freezers in institutional outlets and household refrigerator/freezers in virtually every home. The next best insulants (fiber glass, cork, etc.) are about half as thermally efficient as modern CFC-blown foams. To be compelled to revert to such inefficient materials will more than double the cost of the required insulation as well as involving all trucks and railcars in carrying more non-productive weight, thereby expending more energy.

A small but important use of CFC's in the frozen food industry—although not used by Southland Frozen Foods, Incorporated, at this time—is the use of one CFC—dichlorodifluromethane, which is the only FDA-approved liquid food freezant (LFF) for direct food contact. This freezing technique represents the ultimate in quick freezing of food in that it freezes products in seconds, and results in superior flavor and texture retention in many products (e.g., corn-on-the-cob, corn, shrimp and others) and is indeed essential for a few products that cannot be properly frozen in a conventional manner. While the threat of regulation hangs over the continued availability of CFC's, LFF is not growing in use to the detriment of the American consumers' choice and satisfaction.

To deny to the refrigerated and frozen food industry the continued economic availability of CFC's is to throw the industry back some fifty years in addition to making obsolete the hundreds of millions of dollars of CFC containing refrigeration equipment currently in use. The small businessman will especially be hurt in that he does not have the financial resources to purchase the new equipment.

It is premature to regulate now, and furthermore (should action be required in the future) enormous regard should be had to the economic effect of any such regulation on the refrigerated and frozen food industry, the increased cost of the food supply and the economic impact on thousands of small companies such as Southland Frozen Foods, Incorporated.

Thank you for the courtesy of allowing me to express my concerns on a topic of great importance to myself, my employees, customers and the American consumers.

I am happy to respond to any questions you may have.

Mr. LUKEN. Well, I think the EPA was making the point that some of the stories and rumors were exaggerated. Perhaps that was one of them.

I don't think I heard anything authoritative on an actual CFC ban. We just read you what we know about it. There is the ANPR and the statement of the previous EPA Deputy Secretary that said CFC production caps would only be part of the package and that the CFC production reduction might be as much as 50 to 70 percent. I haven't heard a stronger statement.

Has anybody on the panel heard anything stronger than that?

Apparently the rumors about a ban did not emanate from EPA or from any authoritative source.

Evidently, Mr. Rizzuto, your concern is two-pronged; one pertains to the insulation and the other to the coolant. And you are equally concerned about both aspects of it?

Mr. RIZZUTO. Yes, particularly, as I see it, the distribution cycle in just the frozen food industry alone is some $20 billion in sales of product that is moved all around the country from one end to the other.

All our refrigerated trailers and refrigerated railcars use CFC's. I see this somehow having to increase the cost of food which is plenty high right now.

Mr. LUKEN. OK.

Mr. Rager, you presented a very cogent case with reference to the changeover and the cost to your company. This would be a cost which would have to be borne by yourself, wouldn't it?

Mr. RAGER. It certainly would, because it is a family-owned operation and most of the ones I am speaking of would have to take care of the costs personally.

Mr. LUKEN. It is not so simple as just changing chemicals. Don't you have to change the whole machinery?

Mr. RAGER. Everything has to be changed, right down to the electrical, because you are using a different type of compressor altogether. As the gentleman here stated, I had it figured at about a $50,000 cost for us personally to change over.

Mr. LUKEN. And then the net result would be a much more potentially dangerous kind of operation.

Mr. RAGER. More dangerous, and less efficient also.

Mr. LUKEN. Yes.

I think your testimony has been a very valuable addition.

Is there anything that you gentlemen want to further discuss?

I am personally gratified by the information that has been forthcoming from this hearing, and I want to express my gratitude to those who attended and testified today. In light of the numerous other committee hearings and today's House floor activity, the number of subcommittee members present today is an indication of the congressional interest in this issue.

Our interest will not end with this hearing; there will be continued congressional action on the CFC issue. Until then we look forward to receiving the further reports from EPA.

[Additional material submitted for the hearing record follows:]

BEFORE THE
UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

OZONE-DEPLETING CHLOROFLUOROCARBONS; PROPOSED PRODUCTION RESTRICTION: ADVANCE NOTICE OF PROPOSED RULEMAKING. 45 Fed. Reg. 66726 (October 7, 1980)	40 C.F.R. Part 762 OPTS-62009

COMMENTS OF THE ALLIANCE FOR
RESPONSIBLE CFC POLICY

January 5, 1981

EXECUTIVE SUMMARY

The Alliance strongly opposes any further regulation of CFCs at this time. Such regulation cannot be justified in light of (a) the lack of any evidence that ozone is being depleted as hypothesized, (b) the availability of an early warning system, (c) the substantial uncertainties and lack of international agreement with respect to the science concerning both the ozone depletion hypothesis and the possible effects (if any) of any ozone depletion upon man and the environment, (d) the insignificant risk attributable to a delay in regulation, and (e) the tremendous public benefits which depend upon the continued ability to purchase and use CFCs at satisfactory levels and affordable prices.

EPA should not regulate on the basis of unverified scientific theory. Instead, the Alliance urges EPA to defer any further regulation until such time as there is an international consensus regarding the science and the need for regulatory action. In the interim, the statistical technique of time-trend analysis, applied to actual measurements of ozone concentration, will provide an "early warning system" capable of detecting even small changes in the stratospheric ozone concentration.

Substantial Scientific Uncertainties Exist

There are substantial uncertainties regarding the validity of the ozone depletion hypothesis. The 1979 National Academy of Sciences ("NAS") Reports relied upon by EPA have been subject to serious criticism. Their conclusory findings in many cases are not supported by the text of the Reports. There are gaps in the data, and the one-dimensional mathematical models used are not capable of accurately describing current stratospheric conditions, much less the conditions as they may exist one hundred years from now. Further, these reports issued in 1979 are now dated, in contrast to recent developments in this rapidly-moving scientific field.

Reports issued by the United Kingdom (October 1979) and the European Economic Community (June 1980) examined essentially the same data as the NAS, but reached markedly different conclusions. These reports underscore the extreme scientific uncertainties and conclude that no regulatory action is warranted at present.

As yet, the hypothesis remains unverified. According to the theory, over 2 percent depletion should already have occurred. Yet the only available empirical evidence regarding the ozone level indicates that its concentration has actually increased somewhat over the last 10 years. These data suggest either that the theory is incorrect or that there are countervailing actions which the models do not reflect.

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There are also substantial uncertainties with regard to the effects of any ozone depletion. Even as theorized by NAS and EPA, ozone depletion would be only a minor component of any human risks associated with increased exposure to ultraviolet light, risks far outweighed by alterable life style factors.

Restriction of CFCs Would Eliminate Substantial Benefits

In the ANPR, EPA virtually ignores the beneficial aspects of CFCs. However, restrictions on the levels of production or use of CFCs would deprive the public of substantial benefits attributable to the use of CFCs and would have a detrimental impact upon virtually every American. Because CFCs are stable, non-flammable, and of very low toxicity, they are highly desirable from a worker and consumer point of view. There are no commercially available, acceptable alternatives for most uses of CFCs. Possible alternatives that may be available are either less safe, do not perform satisfactorily, or would significantly increase energy consumption.

Any restriction on CFC production would also impact upon the development of important new uses of CFCs, such as the Department of Energy's ("DOE") ocean thermal project in which CFCs would be used to harness thermal energy. DOE's recent energy efficiency standards reflect governmental recognition of the value of CFCs, e.g., as an excellent insulating material.

Indeed, EPA itself recognized the importance of CFCs during the recent "Phase I" proceedings, by exempting from regulation all nonaerosol propellant uses and a number of aerosol propellant uses found by EPA to be essential.

Any "cap" upon CFC production, let alone further reductions or the threat of such reductions, will have substantial adverse economic effects. Under EPA's approach, increases in existing CFC uses would create artificial shortages for various using sectors and could result in reduction or termination of price-sensitive beneficial or even essential uses, as well as significant increases in the cost of all uses. In addition, such restriction would impact negatively on developing future CFC uses, some of which may be critical from an energy conservation standpoint. Further, tremendous uncertainties would be created by this approach, delaying and perhaps jeopardizing long-term capital investments.

Preconditions to Further Regulation Cannot Be Met

Congress, in enacting the ozone provisions of the Clean Air Act, clearly contemplated that EPA would proceed with further regulation only when there was greater certainty as to both the occurrence of CFC-caused ozone depletion and any resulting harm. Those preconditions cannot now be satisfied.

The Toxic Substances Control Act ("TSCA") requires EPA to make a finding of "unreasonable risk" before regulating and to ensure that its regulations are the "least burdensome"

possible. Because of the scientific uncertainty regarding the ozone depletion hypothesis and the insignificant harm attributable to a delay in taking regulatory action, these findings simply cannot be made.

Key EPA Personnel Have Prejudged Essential Issues

Public pronouncements, correspondence and other actions of key Agency officials demonstrate that they have prejudged factual issues central to this proceeding. Accordingly, EPA personnel who have prejudged the issues must be disassociated from the proceeding. In any event, EPA must take a fresh look at all evidence submitted in this matter. The Agency cannot rely upon the 1978 aerosol propellant ban, which does not constitute a factual or legal precedent or basis for further regulation of CFC uses.

Further Investigations Are Required

Before EPA can properly consider further regulation of CFCs, it must perform and make public a number of studies required either as a matter of law or of sound agency administration. Under a number of its mandates, the Agency must prepare a thorough economic analysis of any proposed regulation. Because the so-called "cap" is only the first step in the Agency's overall plan, any such analysis must consider the impact of the Agency's intended 50-70 percent later reduction.

The Rand Report is clearly inadequate to fulfill the Agency's obligation in this respect. That Report only provides

a comparison of broad policy options under artificial parameters, not an assessment of the full economic impact of the options contained in the ANPR. Among other shortcomings, the Report did not consider the effect of a cap, much less substantial reductions in production, and ignored or inadequately assessed the downstream effects on final CFC users. These and other problems will not be substantially alleviated by the new studies now proposed or under way.

EPA should, as a necessary adjunct to educated decision-making, prepare an environmental impact statement ("EIS") covering, among other things, any irretrievable commitments of resources that would be involved in a forced dislocation of CFC uses and any potential adverse health and environmental effects of possible substitutes. Moreover, under the National Environmental Policy Act ("NEPA") and applicable Council on Environmental Quality guidelines, EPA must prepare a programmatic EIS assessing the Agency's long-term plan for up to 70 percent reduction in CFC use. The Agency must also comply with other NEPA requirements such as consideration of alternatives.

EPA is subject to other applicable requirements. Executive Order 12044 directs the Agency to prepare a regulatory analysis of its proposed regulation as well as of significant alternatives. The recently-enacted Regulatory Flexibility Act requires the Agency to take into account

special circumstances of small businesses and to consider alternatives that would reduce effects upon them. Small businesses must be made aware of proceedings and given an adequate opportunity to participate. Because EPA may rely upon TSCA for regulatory authority, it must comply with the information-producing requirements contained in that Act, including a full cost-benefit analysis. Under the Clean Air Act, EPA must publish an economic impact assessment prior to issuance of a proposed rule and must take costs and feasibility into account in its decision-making process.

EPA should address anew the science surrounding the ozone depletion hypothesis. Preferably EPA should encourage the convention of an international symposium at which a cross-section of experts from all relevant sectors and disciplines can conduct a meaningful exchange of views, free from inhibitions or constraints imposed by regulatory authorities. But at a minimum the Agency should request the NAS to update its earlier reports, particularly with regard to ozone trend analysis. The Agency should also make full use of its Science Advisory Board and must satisfy its duty under the Clean Air Act to address other possible ozone depletors before engaging in regulation of CFCs.

Although these required studies may appear overwhelming or redundant, there need be no duplication of effort and they are not in fact excessive. Each of these studies is amply justified under the circumstances.

EPA Should Adopt the Alliance's Recommended Alternative

The Alliance urges EPA to adopt an alternative approach of "deferral with continuing investigation". Under this alternative, EPA would defer further regulation of CFCs until there is an international consensus on scientific issues and on the need for regulation. During this time, scientific research programs currently under way will continue. These programs can be expected to reduce or resolve many of the current scientific uncertainties. Awaiting such scientific developments will not pose any significant risk for society. As an example, even assuming the validity of the theory and the accuracy of the NAS estimates, the maximum incremental depletion attributable to a delay of up to five years in regulation of U.S. production would be less than 0.2 percent. During the deferral period, ozone trend analysis will provide an "early warning system" capable of detecting small changes in ozone concentration.

Moreover, unilateral U.S. restrictions will not have any appreciable effect on eventual steady state depletion (if any), but will impose substantial adverse economic impacts upon producers and users of CFCs and upon American workers and consumers.

I. THERE ARE SUBSTANTIAL UNCERTAINTIES RESPECTING THE VALIDITIY OF THE OZONE DEPLETION HYPOTHESIS AND THE EFFECTS, IF ANY, UPON HEALTH AND THE ENVIRONMENT

A. Introduction

This section presents a brief review of the ozone depletion theory and the current status of stratospheric science as it relates to the theory. It is not meant to be complete in scope or detail.[1/] but, rather, to provide an overview of important developments since publication of the 1979 report by the NAS.

The ANPR states that EPA has "relied primarily on the analysis of the National Academy of Sciences (NAS) for support of this theory . . . ." 45 Fed. Reg. at 66727. Since the NAS Report, "Stratospheric Ozone Depletion by Halocarbons: Chemistry and Transport" [NAS 1979a] (the "NAS Report"),[2/] was published in November, 1979, a body of new information has

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1/ For more detailed discussion of the science of the ozone depletion theory, especially with regard to developments in the science since the release of the 1979 NAS Reports, the reader is referred to the ANPR submissions from the CFC producers. The domestic CFC producers are Allied Chemical Corporation, E. I. duPont de Nemours & Co., Kaiser Aluminum & Chemical Corporation, Pennwalt Corporation, and Racon, Inc./Essex Chemical Corp., all of whom are members of the Alliance. Their scientific submissions are incorporated herein by reference.

2/ This report is referred to throughout these comments as the "NAS Report". The term "NAS Reports" includes the November 1979 NAS Report and the report issued by the NAS in December 1979 entitled "Protection Against Depletion of Stratospheric Ozone by Chlorofluorocarbons" [NAS 1979b].

become available which alters significantly both estimates of potential CFC-induced ozone depletion and the certainty of those estimates.

Based on an updated assessment, the Alliance concludes that the regulatory proposals outlined in the ANPR are not justified by the current status of the ozone depletion theory.

B. Overview

In 1974, Molina and Rowland [1974] published the results of their studies that suggested CFCs may be a significant source of chlorine to the stratosphere and that this chlorine may destroy ozone, i.e., chlorine from CFCs may gradually deplete the ozone layer. This proposal, which is widely known as the "ozone depletion theory", suggested that:

- CFCs are not decomposed in the lower atmosphere (troposphere) -- they have a long lifetime in the atmosphere.
- The long lifetime permits CFCs to diffuse to the upper atmosphere (stratosphere).
- In the stratosphere, CFCs are decomposed by ultraviolet radiaion ("UV") to release
- chlorine atoms.
- Chlorine atoms reduce the concentration of ozone in the stratosphere through a catalytic cycle (Reactions 1 and 2) which repeats many thousands of times.

$$Cl + O_3 \rightarrow ClO + O_2 \quad (1)$$

$$ClO + O \rightarrow Cl + O_2 \quad (2)$$

$$\text{Net: } O + O_3 \rightarrow 2O_2$$

The ozone depletion theory prompted a major worldwide research effort to understand better the possible effects of anthropogenic chlorine on the ozone layer. Two major assessments of the science [NAS 1976; NASA 1977] agreed that a potential problem existed, but noted substantial uncertainty and gaps in scientific knowledge and understanding of stratospheric chemistry.

In November 1979, the NAS [NAS 1979a] calculated (using a computer model devised to simulate the atmosphere (see Subsection C-4, infra)) that continued release of CFC-11 and CFC-12 at 1977 global levels would result in eventual depletion of stratospheric ozone by 16.5 percent,[3/] citing a 3-30 percent range of uncertainty. In December 1979, the NAS further reported [NAS 1979b] on the effects that a 16 percent depletion of stratospheric ozone might produce. The NAS Report on chemistry and transport [NAS 1979a] concluded that "predictions for ozone depletion are valid within the stated uncertainty ranges."

3/ The computer model used by the NAS calculated an ultimate depletion of 18.5%. This was adjusted to 16.5% in an attempt to quantify the impact of a number of then outstanding uncertainties in the science.

In the ANPR, EPA has relied exclusively on the NAS analyses of the theory of stratospheric ozone depletion by CFCs as well as of the potential hazards posed by such depletion. An additional problem with the science justification cited in the ANPR is that EPA relies excessively on the "Key Findings" sections of the NAS Reports, seemingly ignoring qualifying statements within the bodies of the Reports themselves. A discussion of this excessive reliance is set forth in Appendix B to these comments.

In contrast, the Alliance's position is that a scientific consensus on this complex issue is conspicuously absent and that the state of the science does not justify regulation of CFCs at this time.

Support for this position may be found in the October 1979 report by the United Kingdom Department of the Environment [U.K. DOE, 1979] (the "U.K. Report"), which concluded, among other things, that:

> [p]resent understanding of ozone depletion is limited and is based on model assumptions which have not been adequately validated. (p. 6)
>
> * * *
>
> Strict regulation is not warranted at present. (p. 10)

Several producer members of the Alliance have commented on the NAS findings [e.g., Du Pont, 1980a, 1980b]; those comments are included as part of the submissions of those

companies. Du Pont stated in its critiques that the NAS Reports underestimated the major uncertainties in stratospheric science and reached conclusions on the effects of ozone depletion which cannot be supported by present knowledge.

Subsequent support for the Alliance's position is found in a more recent review of the science prepared for the Commission of the European Communities ("EEC") [Brasseur, 1980]. On the basis of this review, the Commission has reported to the Council of the EEC [EEC, 1980] (the "EEC Report") that the computer models used to calculate future ozone depletion are simplified and cannot fully describe the behavior of the atmosphere and its minor constituents such as ozone, and concluded: "[a]t present there is nothing to indicate that CFCs have had a genuine effect on the ozone layer" (p. 8) (emphasis added).

Both the United Kingdom and EEC analyses of the theory have been ignored by EPA in the ANPR.

The situation remains that the ozone depletion theory has been neither proved nor disproved. However, of great importance, recent statistical analyses (ozone trend analyses) of real world ozone measurements from the worldwide Dobson network do not indicate any ozone depletion has occurred. (In contrast, the NAS Report [NAS, 1979a] stated that 2.1 percent ozone depletion has already occurred from CFC emissions, based on computer model calculations.) The statistical analyses

would have detected a depletion as large as that calculated for the NAS Report. Analyses of the ozone measurements suggest computer models overestimate the amount of ozone depletion that may occur from the CFC effect or an offsetting trend -- natural or man-made -- is occurring equal and opposite to the CFC effect and of the same time duration.

The only apparent potential harm to the ozone layer from CFCs is that calculated by computer models to occur in the future. Yet, the predictive reliability of the models is unknown. However, it is known that the models fail to simulate adequately important regions of the present-day atmosphere.

Additionally, since the NAS Report was published, a number of chemical reactions of the hydroxyl (OH) radical have been shown to be more important than thought previously. All the reactions are faster or more significant than indicated by earlier measurements or estimates, with the result that calculated OH concentration in the lower stratosphere has been reduced significantly. This result directly impacts on calculated ozone depletion since the amount of chlorine available to react in the theoretical ozone depletion cycle (Reactions 1 and 2) is governed, in part, by the reaction.

$$HCl + OH \rightarrow Cl + H_2O \qquad (3)$$

If the average OH concentration is lowered in the stratosphere, HCl will be converted to Cl more slowly, which reduces calculated ozone depletion. The reactions, along with other changes

in computer input data, lower calculated ozone depletion into the range of 7-10 percent at steady state, or about half that calculated by NAS [NAS, 1979a], the report upon which EPA places its sole reliance as to the extent of ozone depletion. These lower estimates of ozone depletion are less inconsistent with the results of ozone trend analysis, but still conflict with them, since the latter suggest an actual increase in ozone over the period 1970-1979, a period for which the computer models calculate an ozone decrease.

In addition, a number of uncertainties remain that could further reduce ozone depletion substantially from that calculated by computer models. Among them are the lifetimes of CFC-11 and CFC-12 in the atmosphere, products of a number of important chemical reactions, and the effect of increased concentrations of carbon dioxide (CO_2) and nitrous oxide (N_2O) in the atmosphere. All are currently under study.

In summary, new developments indicate that calculated future ozone depletion is much less than that reported by the NAS and cited by EPA, and these developments continue to underscore that the uncertainties in the theory are much larger than those suggested in the NAS Report [1979a]. It is now clear that the risk in waiting for resolution of uncertainties of the ozone depletion theory is minimal. As an example, a maximum difference of only about 0.2 percent future incremental ozone depletion is calculated to occur between scenarios in

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which CFC emissions are stopped unilaterally in the U.S. in 1985 vs. 1980.[4/]

It is worth repeating that the ozone depletion theory in its present form is characterized by uncertainty and a lack of world scientific consensus. Thus, a clear need exists for additional research to determine to what extent, if any, CFCs will affect the stratospheric ozone layer. Scientific research programs are under way to reduce the many uncertainties surrounding predictions of future ozone depletion and the effects of such depletion were it to occur. Many of these uncertainties are expected to be substantially reduced in a period of about five years. The research programs are sponsored by government, individual companies and through the FPP of CMA [CMA, 1980], previously referred to and described in Appendix A to these comments.

The situation perhaps is best summarized by again citing two conclusions of the EEC Report [EEC, 1980]:

4/ In Du Pont's submission on the NAS Report on the effects of ozone depletion [Du Pont, 1980b], the effect of a regulatory delay from 1980 to 1985 (in the most stringent case, a hypothetical ban on U.S. CFC production) was examined using the Du Pont computer model. The maximum future effect from the delay was found to be an incremental depletion of 0.2 percent. Even if ozone depletion by CFCs proves to be real, a 0.2 percent incremental depletion of ozone would produce no observable or significant incremental effects.

> At present there is nothing to indicate that CFCs have had a genuine effect on the ozone layer (p. 8)
>
> * * *
>
> [A] delay of 5 years before any decision is taken on CFCs can be reasonably accepted. (p. 7)

C. Detailed Discussion

1. Ozone Trend Analysis.

A number of statistical studies (time series analyses) of Dobson ozone measurements [Hill and Sheldon, 1975; Pagano and Parzen, 1975; Hill et al., 1977; Tiede et al., 1979; Reinsel et al., 1980; St. John, 1980][5/] conclude that ozone depletion has not occurred. On the contrary, the studies show a slight -- but not statistically significant -- increase in atmospheric ozone concentrations.

Reinsel et al. analyzed ozone measurements from 36 Dobson stations and concluded the trend in ozone was (+ 0.3 ± 1.4) percent for the period 1970-1978. In contrast, the model calculated value for the same period from the NAS Report [NAS, 1979a] is (- 1.5 ± 1.1) percent. The work of Reinsel et al. was carried out after the NAS Report was published.

St. John [1980] used a somewhat different approach to time series analysis and obtained results similar to those of

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5/ Copies of these and all other cited references are included in the submissions of the CFC producers.

Reinsel et al. In addition, St. John [1980a] extended his analysis to include 1979 data with the result that the trend in ozone from 1959 to 1979 is (+ 1.5 ± 1.0) percent. These studies are also supported by more traditional analysis techniques of ozone measurements [Angell, 1978; Angell and Korshover, 1980], which show ozone levels in 1979 a significant 2 percent above average.

These results emphasize two main points:

(1) Analyses of actual ozone measurements uniformly show ozone levels have increased during a period they were calculated to decrease; and

(2) Ozone trend analysis is a technique sensitive enough to detect even a small change in ozone trend.

The latter capability suggests that ozone trend analysis can be used as an "early warning system" to monitor ozone levels. The method can detect small trends in ozone -- up or down -- with error bars in the range of 1.0 to 1.5 percent, and the error bars become smaller with each new year of ozone measurements. With the early warning system, any negative trends in ozone can be detected and, if necessary, appropriate action can be taken. In this way, ozone depletion could never exceed a few percent, even allowing for "overshoot".6/

6/ "Overshoot" is the term applied to the theoretical ozone depletion calculated by models to occur after CFC emissions cease. The theory says that CFCs already present in the lower atmosphere will still be transported to the stratosphere causing ozone depletion to increase to a peak

(Footnote continued on next page)

2. CFC Lifetimes.

Model calculations of ozone depletion assume that all fluorocarbon released to the atmosphere reaches the stratosphere to deplete the ozone layer. An experiment, the Atmospheric Lifetime Experiment ("ALE") [Cunnold et al.] is in progress to measure the lifetime of CFC-11 and CFC-12 in the atmosphere. Put another way, the experiment allows determination of the fractions of CFC-11 and CFC-12 that actually reach the stratosphere. The experiment should produce definitive lifetimes in 1982, but preliminary results for the lifetimes of CFC-11 are available from 18 months of data. The preliminary lifetime is about half that assumed in the models, but the uncertainty limits are wide and include the longer lifetime. If this shorter lifetime is confirmed by additional measurements, calculated ozone depletion by CFC-11 would be halved. In that case, CFC-12 would be expected to have a short lifetime also, so that the ALE results may cut total calculated ozone depletion in half.

Short lifetimes for CFC-11 and CFC-12 suggest a destruction process exists in the troposphere for these

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(Footnote continued from previous page)

value before ozone slowly returns to normal levels. The peak value is calculated to be 1.5 times the existing depletion when emissions stop.

compounds. CFC-21 has been measured [Rasmussen et al., 1977; Penkett et al., 1980; Bruner and Crescentini, 1979; Singh et al., 1977; Cronn and Harsch, 1979] in the atmosphere in amounts far in excess of those which can be accounted for from anthropogenic sources. These results lead to the suggestion that CFC-21 may be a degradation product of CFC-11.

$$\underset{\text{(CFC-11)}}{CFCl_3} \rightarrow \underset{\text{(CFC-21)}}{CHFCl_2} \qquad (4)$$

The degradation of CFC-11 and CFC-12 on sand surfaces has been studied [Ausloos and Rebbert, 1980; Ausloos et al., 1977]. Crescentini and Bruner [1980] measured high concentrations of CFC-21 in air masses that had passed over the Sahara Desert.

Similarly, CFC-22 could be formed from CFC-12:

$$\underset{\text{(CFC-12)}}{CF_2Cl_2} \rightarrow \underset{\text{(CFC-22)}}{CHF_2Cl} \qquad (5)$$

Rasmussen et al. [1980] have measured concentrations of CFC-22 larger than those expected from estimated releases.

In summary, a destruction process for CFC-11 and CFC-12 in the troposphere may exist. Additional studies will confirm or disprove this possibility in about two years.

3. Chemistry.

The NAS Report [NAS, 1979a] calculated a value of 18.6 percent ozone depletion (as indicated earlier -- arbitrarily reduced to 16.5 percent). Recent revisions in a number

of rate constants reduced this value to 13.9 percent [see Wine et al., 1980]. Still more recent studies of a number of reactions of the OH radical with HNO_3 [Wine et al., 1980] and HO_2NO_2 [Molina and Molina, 1980; Littlejohn and Johnston, 1980; Barker, et al., 1980] show these reactions to be much faster and/or more important than thought previously. The fast rates reduce calculated ozone depletion by about a factor of 2, i.e., in the range of 7 to 10 percent.

Another important point is that the pressure and temperature dependencies (how the rate of the reaction varies with pressure and temperature) of a number of important reactions have not been studied. In many cases, the pressure dependence of the reaction rate has been measured only over a narrow range or, as is more often the case, not at all. Temperature studies are more extensive, but not complete. A specific reaction which has caused considerable confusion is that of OH + HO_2 [Hack et al., 1978; Burrows et al., 1978; Chang and Kaufman, 1978; Demore, 1979; and Hochanadel et al., 1972]. In view of the importance of reaction rates as computer model input data, this lack of information is a source of uncertainty in all ozone depletion estimates.

Still another source of uncertainty is the possibility of alternative reaction products in a number of key reactions. For most reactions, products are assumed, not identified. For example, the following reactions are shown with

their assumed products (a) and possible alternative products (b).

$$HO + ClO \rightarrow HO_2 + Cl \quad (6a)$$

$$\rightarrow O_2 + HCl \quad (6b)$$

$$HO_2 + ClO \rightarrow O_2 + HOCl \quad (7a)$$

$$\rightarrow O_3 + HCl \quad (7b)$$

$$HOCl + h\nu \rightarrow HO + Cl \quad (8a)$$

$$\rightarrow O + HCl \quad (8b)$$

In each (b) reaction pathway, HCl is formed, removing Cl from the postulated ozone depletion cycle (Reactions 1 and 2). If the (b) pathway occurred to the extent of even 10 percent for any of these reactions, calcuated ozone depletion would be reduced substantially [Howard, 1980]. Until the products of these and other reactions are determined quantitatively under conditions of stratospheric temperature and pressure, the uncertainty exists that models may greatly overestimate ozone depletion.

4. Atmospheric Models.

Atmospheric models are complicated computer programs that attempt to simulate the real atmosphere and to reduce the mass of experimental and theoretical information to a manageable form. A one-dimensional model ("1-D") considers a globally-averaged atmosphere with altitude as the only variable. Two-dimensional ("2-D") models include both altitude and

latitude variations and permit more realistic comparisons of calculated values and measurements. They permit the concentration of chemical species to be calculated as a function of altitude, latitude, season, and day or night.

Their utility is demonstrated by a 2-D model calculation [Pyle and Derwent, 1980] of variations of ozone depletion with latitude. This model calculated maximum ozone depletion at polar regions in winter -- the time and location of minimum incidence of ultraviolet solar flux, lowest population, and lowest biological activity. The calculations also show the percent increase in erythemally-weighted ultraviolet radiation dose associated with a one percent decrease in global average ozone concentrations is closer to 1 than 2. These results tend to reduce the effects of any ozone depletion, should it occur.

One important uncertainty in all models is transport -- the movement of chemical species in the model atmosphere. Obviously, in a 1-D model, movement is simulated only in the vertical direction, and in a 2-D model, both in the vertical and latitudinal (north-south) directions. The NAS Report [NAS, 1979a, p. 1.] subjectively estimated the uncertainty in transport at a given altitude in their model at about a factor of 2. However, Derwent [U.K. DOE, 1979, p. 158] made several calculations of ozone depletion changing only transport in the several calculations. The transport parameters were those reported by five well-established modeling groups worldwide.

The calculated depletion ranged over a factor of 4 from the lowest to the highest values. This study shows that calculated ozone depletion is sensitive to transport and, hence, is uncertain, particularly since transport itself is not well defined.

The effects of a number of other atmospheric perturbations, e.g., increasing CO_2 concentrations [Groves and Tuck, 1979], increasing N_2O concentrations [NAS, 1979, p. 181] and volcanoes [Johnston, 1980; Steed et al., 1980] have been investigated. These studies suggest that CO_2 and N_2O effects may reduce calculated ozone depletion, while calculated effects of volcanic eruptions on the ozone layer are not evident in the record of ozone measurements.

5. Atmospheric Measurements.

A stringent test of computer models is to compare calculated concentration profiles for a chemical species with actual measured values for the present-day atmosphere. For a number of important chemical species, calculated and measured profiles do not agree.

a. ClO [7/]

Below 30 km, models calculate about 4 times as much ClO to be present than is actually measured, which suggests the

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7/ ClO is the key intermediate product in the hypothesized destruction of ozone (O_3) by chlorine (Cl). See reactions (1) and (2).

models overestimate ozone depletion [NASA, 1979, p. 177]. The discrepancy is also present in 2-D model calculations [Miller et al., 1980]. The recent revisions in chemistry and resultant reducton in calculated ozone depletion improve the agreement, but the slopes of the calculated and measured profiles still disagree, suggesting that the partitioning of chlorine among the several chlorine species in the model may be in error.

Anderson et al. [1980] simultaneously measured very high concentrations of ClO and normal values of ozone on July 14, 1977. These results are inconsistent with the ozone depletion theory. The measurements were checked thoroughly and no source of error was found. Other measurements of ClO [Parrish et al., 1980; Menzies, 1979] also differ from calculated values.

b. HCl.

The amount of HCl measured in the upper stratosphere is greater than that calculated, and in the lower stratosphere, the reverse is true. Again, the comparison is true both for 1-D and 2-D models [Miller et al., 1980].

c. NO and HNO_3.

Compared to measurements, models calculated higher concentrations of NO in the upper stratosphere and of HNO_3 in the lower stratosphere. These discrepancies have not been explained.

The above examples are illustrative of the discrepancies between model calculations and actual measurements in the present atmosphere. The significance of these discrepancies was summed up well by the U.K. Report:

> It follows that if we are not satisfied with our present ability to simulate [with computer models] the natural stratosphere, particularly on the grounds that there may be major errors or omissions in current theory, we must be very cautious in accepting quantitatively any predictions from accompanying perturbation experiments. (p. 143)

6. Effects of Ozone Depletion.

If stratospheric ozone were to be significantly depleted,[8/] it is theorized (with varying degrees of certainty) that the effects would include (a) an increase in human skin cancers, (b) a decrease in yields for some important crops, (c) damage to some marine life, and (d) possibly even some impact on climate.

However, the theorized effects of ozone depletion are based on an even less adequate data base than the question of whether CFCs do deplete ozone; the commensurate uncertainties in the predicted effects are, therefore,even greater.

8/ The NAS Committee on Impacts of Stratospheric Change published a report in December, 1979 [NAS, 1979b] which examined the effects of an eventual 16-30 percent depletion of stratospheric ozone. The "Key Findings" of this report are featured prominently in EPA statements.

These comments do not discuss the effects area, which is considered in the submission of an Alliance member, Du Pont. Du Pont has commented on the NAS report [NAS, 1979b] on effects of ozone depletion [Du Pont, 1980b], concluding that the report's conclusions overstate the certainty expressed in the body of the report, and that the report body itself does not adequately reflect broad scientific opinion.

Du Pont since has contracted with specialists in the major effects areas cited and the comments from these consultants on the NAS effects report are included in their entirety in the Du Pont ANPR submission. In brief, there was near unanimity in these reviews:

(1) It generally was agreed that the 1979 NAS Report provided a reasonably good status report as of 1979; but the reviewers expressed concern over the summary sections which were felt to be oversimplified and which omitted necessary qualifications.

(2) There was further unanimity that in all effects areas the data base remains inadequate to quantitatively predict the effects of ozone depletion, and there was no basis to predict imminent catas-

trophe.

(3) The reviewers opined there is a great need for further research, and that the risk in waiting for research results for up to 5 years is negligible.

D. Summary

The preceding sections discuss some of the major discrepancies and uncertainties associated with the ozone depletion theory and the computer calculated ozone depletion values. These are not adequately dealt with in the ANPR.

This brief review of the science shows:

° Time series analyses of actual ozone measurements show an increasing trend in ozone concentrations from 1970-1979. Ozone depletion has not occurred. Contrary to computer model calculations, ozone levels have actually increased. The results suggest that models overestimate ozone depletion or some natural or man-made trend is acting opposite to the CFC depletion trend. Recent scientific developments support the former option.

° Calculated ozone depletion has been reduced from about 7-10 percent by changes in reaction rates

made since the NAS Report was published. And recent preliminary results, if confirmed, would reduce this number still further.

- The lifetimes of CFC-11 and CFC-12 may be about half those assumed in all model calculations. If confirmed, calculated ozone depletion would be reduced by as much as a factor of 2.

- High levels of CFC-21 and CFC-22 in the atmosphere suggest they may be formed from CFC-11 and CFC-12, respectively, i.e., a destruction process for the latter compounds exists in the troposphere. These observations are consistent with shorter lifetimes for CFC-11 and CFC-12.

- The rates of important reactions have not been measured at stratospheric pressure and temperature, and most reaction products are assumed, not measured. If reasonable alternative products were formed in several reactions, calculated ozone depletion could be reduced substantially.

- 2-D model calculations confirm a number of discrepancies between measured and calculated

concentration profiles of important species, which were evident in 1-D calculations.

- The effect of increasing concentrations of CO_2 and N_2O in the atmosphere is to reduce calculated ozone depletion.

- The computer calculated effects of volcanic injection of chlorine into the stratosphere are not seen in the record of ozone measurements.

- The data base of the potential effects of ozone depletion is inadequate to support quantitative predictions, and provides no basis on which to predict imminent disaster.

E. Conclusions

The Alliance concludes that:

- Ozone trend analysis provides an early warning system for any developing problem in stratospheric ozone.

- Ozone depletion has not been measured.

- Calculated ozone depletion is about one-half or less of that stated in the NAS Report.

- Preliminary results, if confirmed, will substantially reduce ozone depletion estimates even further.
- Stratospheric science is in a period of very rapid change.
- The current status of the ozone depletion theory does not justify further regulation of CFCs.
- There is negligible risk in waiting for the results from further research.

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ENVIRONMENTAL PROTECTION AGENCY

[OPTS -62009; FRL]

OZONE-DEPLETING CHLOROFLUOROCARBONS

PROPOSED PRODUCTION RESTRICTION

AGENCY: Environmental Protection Agency (EPA).

ACTION: Advance Notice of Proposed Rulemaking.

SUMMARY: Because of the destructive effect of chlorofluorocarbons (CFCs) on stratospheric ozone, EPA is considering restricting their production such that the potential for ozone depletion does not increase over present levels. Two major approaches to CFC emissions control are being considered: a Mandatory Controls Approach and an Economic Incentives Approach. The first would limit CFC production through mandatory controls or technology based standards. The second would limit CFC production through the distribution of marketable permits. Several options are being explored for the implementation of these strategies.

EPA solicits comments on the appropriateness of restricting the use of CFCs and on the feasibility of implementing the Mandatory Controls and Economic Incentives Approaches.

DATES: Written comments on or before (insert date 90 days after date of publication in the FEDERAL REGISTER).

ADDRESS: Written comments should be sent to the Technical Information Specialist for this Advance Notice of Proposed Rulemaking:

Joni T. Repasch,
Office of Pesticides and Toxic Substances (TS-793),
Environmental Protection Agency,
Room E-447,
401 M St., SW,
Washington, D.C. 20460,
(202-755-8050).

80T-498

FOR INFORMATION CONTACT:

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I. OZONE DEPLETION AND THE NEED FOR REGULATORY CONTROL

A. Introduction

Chlorofluorocarbons (CFCs) are a family of chemical compounds suspected of depleting stratospheric ozone. When ozone concentration is reduced, increased amounts of damaging ultraviolet light (DUV) are permitted to reach the earth's surface. This may have a number of harmful consequences, including higher incidence of skin cancer, decreased crop yields for several important species and adverse effects on the marine food chain.

In March of 1978 the Environmental Protection Agency and the Food and Drug Administration banned CFCs as propellants in nonessential aerosol uses (ref. 1). Several other nations have also already acted to restrict aerosol propellant applications of CFCs. However, continued world emissions of CFCs are still considered a significant and increasing threat to human health and the environment. The temporary emissions reduction achieved by the actions of the United States and other nations regarding CFC aerosol propellants has been nearly eliminated by rapid growth of CFC usage in nonaerosol applications in the United States and abroad, and by continued aerosol use in nations which have as yet taken no control actions.

At present there are five domestic producers of CFCs. The overwhelming percentage of CFC emissions occur in use rather than in manufacturing -- approximately 98 percent and 2 percent, respectively -- so the regulations are directed at controlling emissions in the various CFC applications.

The major non-aerosol uses of CFCs in the United States are:

1. As a refrigerant in mobile air conditioning units used in passenger vehicles;

2. As a solvent, primarily in industrial cleaning, drying, and solder flux removal applications;

3. As the blowing agent for closed-cell rigid foams, used in insulating and packaging applications;

4. As the blowing agent for open-cell flexible foams, used in bedding, furniture, automobile seat cushions, and carpet underlay;

5. As the refrigerant for large industrial and commercial chillers, home refrigerators, freezers and air conditioners, and retail food store refrigerators; and

6. In numerous miscellaneous uses such as liquid fast-freezing of food and hospital instrument sterilization.

Use of CFCs worldwide is projected to increase substantially over the next decade. Production of CFCs in the United States is expected to grow at a 7 percent annual rate (in the absence of any further regulation), from 600 million pounds in 1980, to 1.2 billion pounds in 1990, according to the report on CFC control written for EPA by the RAND Corporation. (ref. 2) Total world emissions, in the absence of any further regulation, are

projected to grow at a 9 percent annual rate over the next decade, from 1.5 billion pounds in 1980 to 4.5 billion pounds in 1990, according to EPA analysis of data collected for the Chemical Manufacturers Association. (ref. 3)

The objective of Agency action is to limit CFC use in all applications such that the potential for ozone depletion does not increase over present levels. The proposed action will recognize the differential impact that individual CFC compounds have on ozone depletion (see Permit Pound Concept, Section II.B.2.a., below).

EPA is considering two major approaches to CFC control. The first is a Mandatory Controls Approach. This would put an indirect ceiling on CFC use through mandatory controls or technology-based standards. Three options for implementing these controls are discussed in Section II B 1. The second major approach is an Economic Incentives Approach. This would put a ceiling on total production, and be implemented through a system in which marketable rights to CFCs are distributed. Three different options for allocating these rights are discussed in Section II B 2. Based upon presently available information, EPA believes the latter approach to be a more efficient method of reducing the environmental and human health risk. The merits of each approach are discussed in more detail later.

This regulatory action would constitute the first United States control on CFCs since the ban on nonessential aerosol propellant uses that was promulgated jointly by EPA and the Food and Drug Administration in March 1978. EPA solicits comments on the approaches, options and issues presented in this Advance

Notice of Proposed Rulemaking.

EPA Phase II CFC regulations will be promulgated under the authority of §157 of the Clean Air Act, as amended, (42 U.S.C. §7450-7459), unless EPA finds under §6(c)(1) and §9(b) of the Toxic Substances Control Act (TSCA) (15 U.S.C. §2601) that it is is the public interest to use TSCA instead of the Clean Air Act.

B. A Summary of the Ozone Depletion Theory

The ozone layer is located in the stratosphere, 10 to 50 kilometers above the earth's surface. It is important to the natural environment because it prevents the more damaging wavelengths (290-320 nm) of solar radiation -- those not screened out by other atmospheric constituents -- from reaching the earth.

The concentration of ozone present in the stratosphere is determined by a dynamic balance between naturally occuring photochemical reactions producing it and other chemical processes destroying it. The rate of destruction of ozone is influenced by the presence of several chemical species containing hydrogen, nitrogen, or chlorine.

In view of the vital screening function of the ozone layer, any significant increase in the rate at which chlorine species are injected into the stratosphere should be of concern, because chlorine and chlorine oxide act as catalysts in certain reactions that destroy ozone. Two University of California scientists theorized in 1974 that CFCs slowly migrate to the stratosphere where they are photolytically disassociated, releasing free chlorine. The continued worldwide release of CFCs is therefore troublesome; it appears to significantly increase the chlorine

concentration in the stratosphere and this in turn leads to ozone depletion. EPA has relied primarily upon the scientific analysis of the National Academy of Sciences (NAS) for support of this theory as well as for an assessment of the potential hazards posed by continued world emissions of CFCs.

Global CFC emissions are not large compared to the emissions of other chlorine-containing chemical compounds, but these other compounds are for the most part quickly destroyed or otherwise removed in the troposphere so that only a small percentage of ground-level emissions reach the stratosphere. In contrast, CFCs are very resistant to removal in the troposphere, so that most of tne CFCs emitted at ground level eventually reach the stratosphere where, in the presence of more intense and shorter-wavelength ultraviolet light, they are decomposed and release chlorine.

To better quantify the predicted effects of CFCs on ozone concentrations, several research groups around the world have undertaken computer simulations of the relevant atmospheric chemistry and physics. Because of the complexity involved in closely simulating such large-scale natural systems, simplifications have been introduced into these models. The most significant simplification has been to consider variations in the concentrations of chemical species only along the vertical dimension (altitude), assuming perfect mixing along the longitudinal and latitudinal dimensions. These are the so-called One-Dimensional Models (1-D Models).

The basic function of the 1-D Models is to solve a complex set of differential equations, providing vertical profiles of species concentrations at any moment in time. Included in the

models are a large number of chemical reactions believed to be occurring in the atmosphere. The chemical reaction rate coefficients and the photolysis rate coefficients (measures of the speed with which reactions occur), the vertical diffusion coefficients (a measure of the speed of vertical transport), and other parameters needed to produce a numerical solution have generally been measured either in the field or in the laboratory. A few are estimates. The inputs to the models are based on both historical and predicted future annual emissions of CFCs at the earth's surface.

NAS used such a model to calculate future effects on the ozone concentration of various emissions scenarios for CFMs.[1] The four scenarios NAS considered all use the same historical emissions data, but differ in their predicted future emissions:

Scenario A assumes that future emissions would be fixed at 1977 levels;

Scenario B assumes that future emissions would remain at 1977 levels until 1983, when a reduction of 25 percent would occur, and that emissions after 1983 would remain fixed at that lower level;

Scenario C is identical to B, except that an additional 25 percent step reduction is assumed to occur in 1988 -- emissions after 1988 would then remain fixed at this new level;

Scenario D assumes that emissions would grow at 7 percent a

1/ CFMs, or Chlorofluoromethanes, are a group of chemicals within the CFC family, which NAS considered because two of them, trichlorofluoromethane (CFC-11) and dichlorodifluoromethane (CFC-12), make up greater than 90 percent of world CFC production.

year until 2000, and then remain constant.

For these four scenarios, NAS predicts the following percentages of ozone depletion:

Table 1 -- Predicted Percent Ozone Depletion*

Scenario	In 20 yrs. (1998)	In 50 yrs. (2028)	steady-state**
A	6.1 (±4.2)	10 (±7)	16.5 (±11.5)
B	5.6 (±3.9)	8 (±6)	13.3 (±9.3)
C	5.2 (±3.5)	6 (±4)	9.4 (±6.8)
D***	9	28	57

Source: National Academy of Sciences

* CFMs only
** The steady-state gives the limiting equilibrium value for ozone depletion, and is equivalent to base year + about 100 years (theoretically infinity)
*** Error ranges are not provided for this scenario, nor are the average values for ozone depletion corrected for temperature and water-vapor feedbacks or tropospheric sinks.

NAS also estimated that historical emissions of CFMs may have already led to an ozone depletion of 2.1 (±1.5) percent.

C. The Risks of Continued World Chlorofluorocarbon Emissions

The National Academy of Sciences issued two sets of reports on this subject in 1976 and 1979. As shown above, the latest reports of the NAS, issued in November and December, 1979 (ref 5,6) conclude that continued world CFM emission at 1977 rates would eventually result in ozone depletion of about 16.5 percent (with a 95 percent probability that the eventual level would fall in the range from 5 to 28 percent depletion). One-fourth of this

depletion would occur within 15 years, and one-half within 35 years. NAS also concludes that if emissions were to continue to increase between 1980 and 2000 by 7 percent annually, instead of levelling off at 1977 levels, there would be a 75 percent probability that ozone depletion would eventually exceed 30 percent (ref. 6, p. 99). Other studies report estimates of ozone depletion that differ somewhat from those in the NAS study, but that fall within the confidence interval of the NAS study.

Ozone depletion would substantially increase the average intensity of biologically damaging ultraviolet light (DUV) reaching the earth's surface. This increase could be as high as 44 percent at mid-latitudes for an ozone depletion of 16 percent. Such increases would be highly detrimental both to human health and to nonhuman biological systems.

Assuming continuation of present patterns of sunlight exposure, NAS predicts that a 16 percent ozone depletion would result in several hundred thousand additional cases of nonmelanoma skin cancer annually, and, with somewhat less certainty, in several thousand additional cases of melanoma skin cancer (often fatal) annually in the United States alone (ref 6, p. 6). A relationship has been epidemiologically established between increased DUV exposure and incidence of non-melanoma skin cancer (ref 8). For nonmelanoma skin cancer, approximately a four percent increase in incidence can be expected for every one percent increase in ozone depletion on the average. For melanoma, this statistical relationship is less certain, but appears to be about two to one. (ref. 6, p. 99).

Other significant effects of increased DUV may include reduced crop yields from many important agricultural species, including tomatoes, sugar beets, and corn (ref 6, p. 67), significant larval and juvenile killings of certain seafood species including anchovies, mackerel, shrimp and crab (ref. 6, p 69), and adverse effects on the microorganisms constituting the base of the marine food chain. These and other environmental effects could be potentially more serious than the effects of ozone depletion upon human health. In addition, continued accumulation of CFCs in the lower atmosphere (troposphere) may induce a slight warming of the mean global surface temperature, but this is less than the warming predicted for a doubling of atmospheric carbon dioxide caused by fossil fuel combustion.

D. Rationale for Including All CFCs

NAS examined only two CFCs, CFC-11 (trichlorofluoromethane) and CFC-12 (dichlorodifluoromethane) because they represent the vast majority of all CFCs produced. NAS also briefly considered CFC-22 (chlorodifluoromethane), but excluded it from the analysis because, as a partially halogenated compound, its likelihood of reaching the stratosphere before dissociating is much less than that of fully halogenated compounds. However, the findings by NAS on the ozone depletion potential of CFC-11 and CFC-12 are relevant qualitatively for all chlorofluorocarbons.

EPA believes that any regulation of ozone depleters should be as comprehensive as possible, consequently this regulation would address all CFCs.

Potential ozone depleters found outside the CFC chemical family may eventually require regulatory action as well. However, the present set of regulations would be limited to CFCs only because there does not exist sufficient information on other ozone depleters, and because the long lifetime in the troposphere of CFCs makes them particularly suspect of increasing the concentration of chlorine in the stratosphere.

The proposed regulatory action would cover chemicals with the following general formula:

$$C_nCl_xF_yH_{2n+2-x-y};\ x>o,\ y>o$$

This formula characterizes all alkanes that contain at least one chlorine and one fluorine, including CFC-11, CFC-12, CFC-113, CFC-114, CFC-115, and CFC-22, as well as several other CFCs not presently manufactured or manufactured only in very limited quantities. The proposed regulatory action intends to take into account the differing ozone depletion potential of the various CFC compounds. EPA is considering including the bromofluorocarbons at a later date if future research substantiates the initial NAS finding that bromine is as effective an ozone depletor as chlorine.(ref. 6, p. 193) EPA solicits comment on this approach to classification of CFCs.

E. CFCs as an International Problem

Ozone depletion truly is a global problem. Regardless of where CFCs actually are emitted, tropospheric mixing results in worldwide CFC distribution with some small

differences between the hemispheres caused by the transport from Northern Hemisphere sources to the Southern Hemisphere. Therefore, the danger presented by all CFCs emitted will be spread around the globe. This means that any damage caused by CFC emissions will not be limited within the boundaries of the source country.

The use and production of CFCs are widely distributed around the world, as shown by Table 2.

TABLE 2 -- World Chlorofluorocarbon Production and Use - 1977

NATION	PERCENT OF TOTAL WORLD	
	USE	PRODUCTION
UNITED STATES	35.8	39.0
EEC*	30.2	39.1
JAPAN	6.5	7.3
OTHERS**	27.5	14.6
TOTAL	100.0	100.0

Source: EPA analysis of RAND Corporation and CMA data

* European Economic Community manufacturers of CFCs are, in decreasing order, Federal Republic of Germany, France, Great Britain, Italy, and The Netherlands

** Other world manufacturers are, in decreasing order, the Communist Bloc, Canada, Australia, Spain, Mexico, Argentina, Brazil, South Africa, India, Israel, Greece, and Venezuela.

As is evident from the above data, no single nation accounts for a large enough portion of world use or production to be able unilaterally to control ozone depletion. If CFC use increases as

forecast (about 9% annually), even the United States, which presently represents about one-third of the world market, can have only a small impact in limiting ozone depletion, when acting alone. The limited impact of a unilateral United States reduction (assuming this 9% annual growth) is shown in Table 3.

TABLE 3 -- Percentage Ozone Depletion Projected Under Three Growth Scenarios *

REGULATORY OPTION:	CONTRIBUTION TOWARD STEADY-STATE OZONE DEPLETION		
(Action taken in 1980)	U.S.	REST OF WORLD	TOTAL
I. No action; uncontrolled growth until 1990	7.5%	24.5%	32.0%
II. Freeze on Production (1980 levels) U.S. only	4.5	24.5	29.0
III. Significant Reductions (70 percent from 1980 levels) U.S. only	1.5	24.5	26.0

Source: EPA analysis of Lawrence Livermore Laboratory modelling

*Assumes that emissions continue indefinitely at 1990 levels.

II. APPROACH TO CHLOROFLUOROCARBONS CONTROL

A. Choosing a Strategy

To protect health and environment in the United States, EPA both must use its ability to regulate domestic CFC activities and must actively encourage other nations to take similar control actions. Domestic reductions without corresponding international action would be insufficient. Accordingly, the U.S. domestic emissions reduction strategy must be chosen not only on the basis of a balancing between risk to the U.S. health and environment (including the relative risk of CFC substitutes), and economic costs, as the law requires, but also on the basis of what effect the choice will have on other nations' decisions in this area. EPA considers that there are three general strategies which it could adopt regarding future emissions:

1. Wait-and-See -- The United States takes no action until better evidence of the ozone depletion theory is obtained.

This is the least economically burdensome strategy in the short term, since it would avoid the administrative and resource costs imposed by further regulatory control, but it also means that the Agency uses none of its regulatory powers to protect the U.S. health and environment from possible future harm.

It is highly likely that if the United States adopts the "Wait-and-See" strategy, the great majority of other producing and using nations will follow suit. Therefore, a domestic strategy of "Wait-and-See" is likely to be equivalent to a world strategy of "Wait-and-See." This approach of inaction would most likely result in continuing large growth in the use of CFCs

worldwide.

2. No-Growth -- The United States limits production to present levels (adjusted for ozone depletion potential) and takes no further action until international conditions and further evaluation of the credibility of the ozone depletion theory warrant.

This strategy is more economically burdensome, but it does signal to other CFC-producing and using nations that the United States is concerned enough about the risks entailed in depletion of the ozone layer that it is willing to take serious action on the basis of present knowledge. At the same time, the strategy makes clear that the United States realizes it cannot solve the problem by unilateral action.

3. Substantial Emissions Reductions -- The United States reduces its production to some fraction of the level predicted to be necessary on a worldwide basis to achieve an acceptably low level of ozone depletion.

This strategy would result in substantial economic costs, but would demonstrate that EPA believes the problem is serious enough to adopt stringent regulatory actions to protect the United States health and environment from possible future harm. However, it is possible that adoption of this strategy could strengthen the "Wait-and-See" attitude abroad by creating the impression that other nations could afford to wait before taking action.

There are two critical problems which make adopting the "Wait-and-See" strategy unacceptable. First, validation of the ozone depletion theory through environmental monitoring is limited because a minimum ozone change of approximately five percent over a period of ten years would be required before a depletion could be observed with statistical confidence. If such measurements were required before regulatory action and, upon availability of these measurements, the nations of the world immediately reduced production, depletion would still continue to increase substantially (an "overshoot") before falling back slowly to more acceptable levels. This overshoot would be primarily be attributed to the CFCs already in the atmosphere. These two factors combined could result in a peak depletion level where unacceptable biological damage would result if action is delayed until ozone depletion is in fact measured.

Second, while it is true that the pursuit of a "Wait-and-See" strategy has no immediate economic cost attached to it, it would make the attainment of a long-term ozone depletion reduction goal much more difficult and costly when and if regulation is eventually undertaken. If world CFC consumption were allowed to grow uncontrolled through 1990, a 65 percent reduction in 1990 use would be required to achieve the equivalent of a 50 percent reduction from present levels. In addition, failure to limit continued CFC growth in the next decade could lead to large capital investments in CFC-dependent technologies. Such investments represent an undesirable

allocation of resources if significant reductions are then required in 1990.

The health and environmental problems resulting from adoption of the "no-growth" strategy are essentially the same as those associated with the "wait-and-see" strategy -- overshoot possibly leading to unacceptable biological damage, and the higher cost of subsequent actions. If adequate confirmation of the theory is taken to require measurable depletion of the ozone layer, the "no-growth" strategy entails precisely the same risks as the "wait-and-see" strategy, except that confirmation would take longer because of reduced annual emissions in the interim. If a decision to act is instead based on cumulative studies of risk coupled with improvements in the modelling of ozone depletion, a "no-growth" strategy would still result in an unacceptable level of risk -- assuming such information requires several years. Furthermore, NAS predicts a "no-growth" strategy would result in a four percent level of depletion within a decade.

Consequently, EPA believes that, given the extreme caution which should be exercised because substantial evidence already indicates that the ozone layer is threatened with depletion, the only acceptable long-term strategy is "substantial emissions reductions."

However, if the "substantial emissions reduction" strategy were implemented immediately, this would likely weaken the United States' effort to produce international action of the same magnitude, and virtually nullify the Agency's domestic actions. By comparison, the "no-growth" strategy, while not providing

adequate long-term protection, would put the United States in a more moderate position when it presents its case to other nations.

Therefore, EPA considers it advisable to adopt a "no-growth" strategy in the short-term, limiting United States production to present levels, to convince other nations to agree to concerted international action. EPA would consider following this action with a "significant emissions reduction" policy if international conditions warrant, and if there has been no significant diminution in the present credibility or predictions of the ozone depletion theory.

B. Approaches to Implementing a No-Growth Strategy

EPA has identified two major approaches to achieving a production limitation. The Mandatory Controls Approach would control domestic use of CFCs by regulating final product use or production techniques through product bans and technology-based standards. The Economic Incentives Approach would limit domestic use of CFCs by allocating CFC rights among manufacturers or end users. Each of these two major approaches to control is discussed in greater detail below.

1. Mandatory Controls Approach

One way to limit CFC growth is by banning certain uses or by requiring specific control technologies. While a limit on production would not be achieved directly through this strategy, it could be approximated. This approach would be comparable to other regulatory programs administered by EPA under the Clean Air

and Clean Water Acts, where EPA has relied primarily on technological controls. EPA could pursue a similar approach to CFC control either instead of or in addition to a direct production limitation. Three options within this approach are discussed briefly below, along with an outline of their advantages and disadvantages. The options could be used either singly or in combination.

Option I: Technology-Based Control

One option is mandatory control technology standards. These standards would be comparable to EPA Clean Water Act effluent limitations: for each CFC-using production process, EPA would identify and mandate the use of the "best available technology" (BAT) or the "best practicable technology" (BPT). Examples of possible mandatory controls include:

1. Recovery and recycle of CFCs from flexible urethane and rigid non-urethane foam production using carbon adsorption techniques;

2. Performance standards on solvent degreasing equipment;

3. Conversion to CFC-502 (a less effective ozone depletor) in retail food store refrigeration;

4. Use of CFC-22 or helium as a test gas in refrigeration equipment manufacture;

5. Recovery and recycle of CFCs during mobile air conditioning servicing and repair.

Each of these possibilities, as well as others not mentioned above, has varying emissions reduction potential. Furthermore, they are in various stages of technical development, and requiring them would have differential economic impacts depending on firm size and other factors. Through efficient development and enforcement of these and similar standards, it is possible that EPA could meet its desired goal.

The problem with technical standards is that growth in the CFC-using industries could, in a manner analogous to that following the aerosol ban, offset any gains made through the implementation of such standards. The CFC-using industries are sufficiently varied and dynamic so that implications of this problem are not insignificant. The simultaneous implementation of more than one of the mandatory control options may mitigate this problem somewhat.

EPA requests comment on the feasibility and cost of these control options, as well as their applicability to the CFC problem.

Option II: Selective Product Bans

EPA could establish criteria through which to weigh the utility of various CFC-using products against their contribution to stratospheric ozone depletion and ban or restrict those products which were determined to have the least social utility compared to risk. By placing outright bans on certain products or uses of CFCs and mandating periodic review of the remaining uses, EPA might be able to achieve its goal of zero growth in ozone depletion potential.

EPA would employ factors such as the following in deciding which products ought to be subject to a ban:

1. The risk to health, safety and the environment, taking into account the type and quantity of CFC used in the product or process;

2. Availability of another product or process which can make the product or provide a similar service;

3. Relative efficiency and effectiveness of substitutes;

4. Essentiality of CFC use in providing a health, safety, or environmental benefit to the American public;

5. The environmental risk posed by substitutes.

Specific product bans have some of the same disadvantages as technology-based standards. Most importantly, growth in other existing uses and the development of new uses could quickly offset any gains achieved by bans. Also, given the absolute nature of a ban, economic efficiency could be lost, since the prohibited uses may be overcontrolled while other exempted uses incur no controls at all -- not even those which would be available at low cost.

The above list of factors is not definitive, but it does illustrate the issues that would have to be addressed in making comparisons of utility. EPA requests comment on the appropriateness of specific product bans to address the CFCs problem, and on the factors used to evaluate specific products.

Option III: Use Ceiling Combined With A SNUR

Under this option, EPA would collect use data from

individual users of CFCs. A given percentage of historical use would establish a baseline for each user, and any user wishing to exceed its baseline would be required to file a Significant New Use Rule (SNUR) notice. EPA would evaluate all notices received, and prohibit or limit some fraction of them, such that total use in a given year would not exceed the desired levels. Transfers of use rights from one user to another would also require the filing of a SNUR notice. This would allow EPA direct and continuing control over domestic allocation of CFCs. EPA has the authority to implement a SNUR plan under Section 5 of the Toxic Substances Control Act, if the Agency determines it is in the public interest to act under TSCA rather than under the Clean Air Act.

The disadvantages of using a SNUR in this instance are substantial: first, the Agency would have to obtain massive amounts of data through the use of TSCA Section 8 to establish baselines; and second, the filing and evaluation of SNUR notices would absorb substantial amounts of Agency and industry resources.

2. Economic Incentives Approach

An economic incentives approach would function by directly restricting CFC production, causing prices to increase to ration allowed production. As CFC prices rise, firms must decide whether to continue to use CFCs and pay the higher price, or switch to substitute chemicals or processes to reduce CFC consumption. The firm's decision would be a function of the cost and availability of substitutes, the potential for control and

the new increased price of CFCs. Those firms for which control is relatively inexpensive would control more extensively. They would have the incentive to continue increasing control until the cost of an additional "unit" of control was equal to the cost of an additional unit of CFC. Alternatively, firms for which control measures are unavailable or exceedingly expensive would take little or no action to control emissions, choosing instead to incur the higher costs of continued CFC use. If the firms involved are generally profit-maximizers, higher prices would provide them the incentive to search for new control options. It is the different control options available to firms and their desire to minimize costs which gives an economic incentive approach its superior efficiency.

EPA is also investigating a use of a tax or surcharge on CFC use to increase the effective price of CFC use. Although this option is less likely to be employed, the Agency welcomes comment on its relative merit.

A production restriction combined with marketable CFC use rights requires a method by which the initial quota would be distributed. There are several ways in which EPA could distribute CFC production or use rights. One is through direct allocation of production permits, either to manufacturers or to users. The other is through an auction system, under which the transfer or "scarcity" payments would flow to the government. The advantages, drawbacks, and specifics of each method are discussed further below.

Option IV. Direct Allocation to Manufacturers

EPA would obtain, possibly under the authority of Section 8(a) of the Toxic Substances Control Act (TSCA) of 1976, specific information on the production of CFCs, as well as on the production or purchase of CFC precursor chemicals, from each of the major domestic manufacturers. Using this information, EPA would establish a production ceiling for the industry based on a particular base year or some formula combining several years. This production ceiling would be measured in "permit pounds," a unit which would allow a producer to vary his mix of products among the various CFCs according to the relative depletion potential of each. (This concept is described in Section II.B.2.a.) Sales of allocations among the manufacturers, or to potential new entrants into the industry, would be permitted.

As described above, the imposition of a production ceiling on CFC manufacturers would induce them to raise the price charged for CFC to allocate the reduced quantity of CFC among users. This increased cost would create an incentive for users to develop CFC conservation techniques or to switch to substitutes. EPA anticipates that such price increases and the resulting profits to manufacturers would be small initially since the anticipated shortfall in production created by the ceiling would not be large. If the production ceiling were to continue for several years, however, the transfer payments accruing to manufacturers could become quite large. The RAND Corparation estimates that total transfer payments will eventually exceed $2 billion. EPA would consider methods which minimize the windfall to manufacturers and minimize impacts on users.

Option V. Direct Allocation of CFC Permits to Users

Instead of allocating permits to manufacturers as outlined above, EPA could make a direct allocation of CFC permits to user industries. This allocation could be made according to historical use, capacity, or some other measure. While insufficient information on the number and size of firms in user industries would make an equitable allocation extremely difficult to implement, this method of allocation might be the most effective in reducing the volume of explicit transfer payments either to manufacturers or to the government. EPA recognizes that, depending on the market structure and the dynamic interrelationship among using and producing industries, a substantial portion of the transfer payments might ultimately accrue to manufacturers even under a system of allocating permits to users. EPA specifically requests comment on this issue.

Option VI. Government Auction of Permits

Rather than issuing permits gratis, -- and thereby creating the possibility that manufacturers would capture the full volume of transfer payments -- an alternative would be for EPA to sell permits to the manufacturers in an auction. This method would allow the government to recoup a large portion of the transfer payments from the manufacturers. This option would be administratively simple, and would be less likely than Option I to freeze the market shares of the manufacturers. Also, a new entrant to the CFC-producing industry would be able to enter the market for permits without the additional cost disadvantage he

would encounter if permits were allocated to existing manufacturers rather than auctioned.

Another alternative would be to auction permits to CFC users (those firms which use CFCs in their production processes or as end products). This option would effectively eliminate the producer's share of the transfer payments. In addition, it would maintain the present level of competition among manufacturers, would be administratively simple, and would not significantly deter competition, entry, or exit for either manufacturers or users.

To make matters even simpler administratively, EPA could auction permits in an unrestricted market to manufacturers, users and other potential participants. Users would buy what they could afford to meet their needs. Manufacturers would buy permits to capture some portion of the market, and perhaps to supply CFCs to those users too small to enter the auction or the permit aftermarket. This type of auction would be the easiest to conduct, since monitoring of participation would not be required.

EPA solicits comments on the efficiency and efficacy of the three major incentives-oriented approaches to CFC control outlined above, and especially, comments on possible methods of direct allocation to users or manufacturers; methods of auctioning permit rights; and the impact and incidence of transfer payments.

2. a. The Permit Pound Concept

EPA recognizes that different CFC compounds present varying potential for depletion of stratospheric ozone. Indeed, EPA would structure the production ceiling regulation in such a way as to provide incentives for industry users to shift from those CFCs most harmful to the stratosphere toward those CFCs posing a lesser threat.

EPA would provide this incentive by establishing the production ceiling in terms of "permit pounds". Under this strategy, each type of CFC would be weighted according to its ozone depletion potential relative to the other CFCs. Ozone depletion potential is primarily a function of molecular chlorine content by weight and the lifetime in the atmosphere of the various CFC compounds. Research to date results in the permit pound conversion factors shown in Table 4.

Table 4 compares the ozone depletion potential of other CFCs with that of CFC-11. For example, according to the chlorine content criteria, CFC-115 is only 20% as harmful to the ozone layer as an equivalent weight of CFC-11.

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TABLE 4 -- Depletion Potential Factor

Type of CFC	(CFC-11 = 1)
CFC-11	1.00
CFC-12	0.79
CFC-113	0.77
CFC-114	0.49
CFC-115	0.20
CFC-22	0.18*

Source: Lawrence Livermore Laboratory

*CFC-22 cannot be correctly measured strictly according to chlorine content. CFC-22 is partially halogenated, which means that relatively little of the emitted compound ultimately reaches the stratosphere, because of its shorter lifetime.

2. b. Establishing a Production Ceiling

In setting a production ceiling, EPA would use the permit pound concept in the following manner: production of each CFC in the base year would be multiplied by its respective depletion factor, and the resulting products would be added to yield the allowable ceiling on ozone depletion potential. Under an economic incentives approach, ozone depletion would remain constant, although the use of permit pounds would allow actual poundage to vary. The substitution of less-depleting CFCs allows the overall production level of CFCs to increase without adding to the ozone depletion potential. (See Table 5 and discussion following.)

TABLE 5 -- Ozone Depletion Equivalents of a Hypothetical Base Year Production

Type of CFC	Hypothetical Base Year Production (millions of lbs.)	Ozone Depletion Factor	Ozone depletion Equivalent (millions of lbs
CFC-11	100	1.00	100
CFC-12	100	0.79	79
CFC-113	100	0.77	77
CFC-114	100	0.49	49
CFC-115	100	0.20	20
CFC-22	100	0.18	18
TOTAL	600		343

Applying the ozone depletion factors to a hypothetical total base year production of 600 million pounds distributed equally among the major CFCs yields an ozone depletion equivalent of 343 million pounds. This may be considered an "allowable stratospheric chlorine ceiling." Such a ceiling holds potential CFC damage to the stratosphere constant while allowing individual firms to alter their production of individual CFCs within the bounds of the ceiling.

EPA would issue production permits under any of the three options outlined above. Compliance monitoring would consist of a comparison of manufacturers' CFC production records with the amounts of permits that they (a) were allocated under Option I, plus those purchased from other manufacturers; (b) received in production orders from users, under Option II or III; or (c)

directly bought in auction, under Option III, plus purchases from others.

Permits, whether auctioned or allocated directly to users or manufacturers, would be in permit pound units. In the example given above, this allocation is stated in CFC-11 equivalent units. For purposes of determining production mix, firms would be allowed to produce relatively more of those CFCs which have less ozone depletion potential compared with the base compound. The multiplier determining the allowable production equivalent per permit pound is equal to the inverse of the ozone depletion factor for each CFC. In short, the less depleting a given CFC, the more would be allowed to be produced per permit pound. For example, the ozone depletion factor for CFC-12 is 0.79 and its inverse is 1.26. Therefore, for each permit pound it is allowed under the production ceiling, a firm could produce 1.26 pounds of CFC-12 compared with only 1.00 pound of CFC-11. The production equivalents derived from Table 4 are shown in Table 6.

TABLE 6 -- Derivation of Production Equivalents

Type of CFC	Ozone Depletion Factor	Production Equivalent
CFC-11	1.00	1.00
CFC-12	0.79	1.26
CFC-113	0.77	1.36
CFC-114	0.49	2.04
CFC-115	0.20	5.00
CFC-22	0.18	5.56

EPA anticipates that the permit pound concept would provide a strong incentive for CFC manufacturers and users, where technically feasible, to seek ways in which to shift their products and processes toward those CFCs with less ozone depletion potential.

EPA requests comments on the permit pound concept, its implementation, and the methods to be used to determine the production ceiling and the production equivalent multipliers.

2. c. Exports Under the Production Ceiling

The global nature of the risks from CFC emission bears heavily on the question of how to treat United States' exports under any regulatory action being considered by EPA. As discussed in Section I.E. above, CFC emissions anywhere around the world contribute equally (depending on the type of CFC and the volume of emissions) to the potential for ozone depletion,

which in turn affects all areas of the globe...

Under a production ceiling, EPA's current thinking is that firms could continue to export CFCs in bulk form or in nonaerosol articles, provided that the additional amount would not exceed their quota under the production ceiling. However, it appears unlikely that firms would continue exporting because they would be placed in an unfavorable pricing position in the foreign CFC market. In uses where large amounts of CFCs are contained in the article, such as centrifugal chillers, exporters would probably alter the present practice of shipping the article overseas fully charged with CFCs. Manufacturers might find it advantageous to ship units charged with a test gas, which is then exchanged for the CFC overseas. Such action, however, would depend on the quantity of CFCs contained in the article and the degree to which the increased cost of domestically purchased CFCs could be passed through to the overseas importers.

Under this approach of including exports in the production ceiling, foreign firms could conceivably increase their production to offset any decrease in United States' exports, which would run counter to the long term goal of reducing global CFC emissions. However, some nations have already taken action to limit their capacity to produce CFCs and have indicated that they will consider taking additional actions. EPA, in cooperation with the Department of State and other concerned agencies, will continue to encourage other countries to reduce global releases of CFCs. Furthermore, the alternative, of excluding exports from the production cap and granting exporters additional permits equal to their present level of exports, might

have serious international ramifications. The global problem may be exacerbated if the United States is in the position of encouraging other nations to take further actions to control CFC emissions while at the same time not controlling United States' CFC exports.

A theoretical third alternative would be to selectively exclude certain use categories of exports from the production cap and include others, but this would appear to be incompatible with the general philosophy of an economic incentives approach; would be difficult to defend on a use category basis (especially since the desirabiltiy of receiving CFCs for certain uses or in certain products would vary among countries); would not solve the problem of bulk shipments of CFCs for unknown uses; and would be difficult to administer.

EPA requests comments on these three alternative approaches to export control, considering business and economic effects, effects on global CFC emissions, international ramifications, and ease of administration. EPA also requests comments on the applicability of Section 12(a)(2) of TSCA to the question of CFC exports. This section empowers the Administrator to control exports if he finds that they would present an unreasonable risk of injury to health or the environment in the United States. Releases from CFCs produced for export will have the same effect on the health and environment of the Untied States as chemicals produced for domestic use.

2. d. Imports of CFC and CFC-Containing Articles

CFCs are presently imported both in bulk form and in articles. For the production ceiling regulation to be fully efficient, a mechanism must be devised to regulate imports of CFCs and CFC-containing articles so that imports are neither given an advantage nor placed at a disadvantage in comparison to domestic manufacturers. Mechanisms to control imports of these items include:

1. Freezing imports at current levels;
2. Establishing a permit system for imports;
3. Accounting for imports in establishing the production ceiling and including importers in the established allocation system.

The first alternative would operate like a quota system with the allotment equal to the amount of bulk CFCs or CFC-containing articles imported in the base period. CFC imports would be tied to the level of imports for a previous year with both the mix of CFCs and the articles containing CFCs remaining unchanged. This alternative would favor existing importers and virtually prohibit new entrants to the import market. It also would enable importers to enjoy some small profit advantage since they would not be operating under a production ceiling similar to that under which domestic manufacturers of CFCs would be operating. Domestic manufacturers and retailers are not expected to be significantly penalized by this alternative since domestic demand is expected to exceed the supply of CFCs from all sources.

The second alternative would be implemented by establishing a separate ceiling for importers and requiring them to purchase permits equal to the amount of pounds of CFCs they want to import either in bulk form or in articles. Their permit price would likely reflect the domestic permit price. This alternative would remove the possibility of an unfair competitive advantage accruing to foreign manufacturers due to domestic CFC regulation. It would also permit the sale of permits between firms importing to the United States. Under this alternative, current importers of CFCs should not have any advantage over those attempting to enter the import market. Furthermore, importing firms would be permitted the same flexibility in CFC use and product mix allowed to domestic firms.

The third alternative could be implemented by including imports under the domestic production ceiling and allowing importers to compete in the permit market along with domestic firms. Like the second alternative, this option would allow the transfer of CFC permits and also would remove the possibility of importers enjoying a cost advantage over domestic manufacturers. It would also allow flexibility in the mix of CFCs originating domestically and abroad, since these two groups would be competing in the same permit market. EPA solicits comments on these options for controlling imports and exports under the proposed production cap.

2. e. Anticipated Technical Responses to an Economic Incentives Approach to a Production Ceiling

EPA has undertaken research to attempt to predict the

measures that CFC-consuming industries might take to stay within the production ceiling. The RAND Corporation has identified a number of steps that industry may take to reduce CFC consumption. These steps do not necessarily exhaust the options for recovery and recycle or substitutions that may be available in the future. Indeed, EPA expects that additional options will become available to industry as research and innovative techniques are stimulated by higher CFC prices.

Initial Actions

a. Large molded foam plants would install recycle and recovery systems;

b. CFC-12 would be replaced by CFC-502 in the manufacture, installation, and servicing of medium temperature refrigeration systems, and by CFC-22 in leak testing in the servicing of retail food refrigeration systems;

c. Solvent cleaning and drying units would either conserve through recycling or find substitutes, and some units would be modified to reduce losses;

d. Flexible slabstock foam plants would convert to methylene chloride.

Intermediate Actions

a. Polystyrene sheet plants would install recycle and recovery systems;

b. All solvent cleaning and drying units would further substitute other solvents, and medium-sized units would also recycle more intensively;

c. Molded foam plants and flexible slabstock plants would install recycle and recovery systems where CFC-11 was still used.

Later Actions

a. All flexible foam plants would improve their collection efficiencies;

b. Polystyrene sheet plants would convert to pentane blowing agent;

c. All solvent cleaning and drying units would further substitute other solvents, and large units would increase their recycling efforts.

These three sets of actions are anticipated to produce the following reductions (from projected levels) in CFC use from 1981 to 1983. (Reductions are given in both real and permit pounds).

Table 8 -- Reductions from Uncontrolled Growth
(millions of pounds)

Phase	1981 real pounds	1981 permit pounds	1982 real pounds	1982 permit pounds	1983 real pounds	1983 permit pounds
Initial Action						
a	13.2	13.2	13.9	13.9	14.5	14.5
b	0.0	3.6	0.0	3.8	0.0	4.0
c	20.7	15.9	21.3	16.4	22.0	16.9
d	15.0	15.0	15.8	15.8	16.5	16.5
	48.8	47.7	51.0	49.9	53.0	51.9
Intermediate Action						
a	7.6	6.0	8.0	6.4	8.4	6.7
b	4.9	3.8	5.2	4.0	5.6	4.3
c	6.0	5.2	6.3	5.4	6.6	5.7
	18.5	15.0	19.5	15.8	20.6	16.7
Later Action						
a	6.5	6.5	6.8	6.8	7.2	7.2
b	7.6	6.0	6.0	6.4	8.4	6.7
c	13.6	10.5	14.6	11.2	15.5	11.9
	27.4	23.0	27.4	24.4	31.1	25.8
TOTALS	90.0	81.8	95.1	86.4	100.3	91.1

Source: Rand Corporation (Note: Figures may not sum due to rounding)

III. A SUMMARY OF ISSUES ON WHICH COMMENTS ARE REQUESTED

EPA welcomes general comment on all aspects of chlorofluorocarbon regulations from members of industry and the general public. EPA especially solicits comment on the following issues:

1. Scientific validity of the ozone depletion theory. Comments on the two 1979 reports of the National Academy of Sciences, and the NASA -Report 1049, December, 1979.

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2. RAND Corporation, Economic Implications of Regulating Chlorofluorocarbon Emissions from Nonpropellant Applications, (Santa Monica, CA, June 1980).

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6. NAS, Protection Against Depletion of Stratospheric Ozone by Chlorofluorocarbons, (December 1979, Washington, DC)

7. National Aeronautics and Space Administration, RP-1049 (December, 1979, Washington, D.C.), "The Stratosphere: Present and Future".

8. National Cancer Institute, Incidence of Nonmelanoma Skin Cancer in the United States, 1977-78, April, 1980.

2. Risks of continued world chlorofluorocarbon emissions. Comments on how these risks, both to human health and the environment, should be quantified and evaluated.

3. Strategies for level of CFC control. Comments on the validity of a Production Ceiling Strategy, as contrasted with Wait-and-See, and Substantial Emissions Reduction.

4. International aspects of CFC regulatory effort. Comments on how to improve the level of international cooperation on this issue and issues related to the import and export of CFCs.

5. Approaches to achieving a production ceiling domestically: comments on economic incentives approaches to chemical regulation; desirability of the various auction and allocation methods; the permit pound concept; and methods of directly allocating quotas or permits to manufacturers or to users. Comments also on the mandatory controls approach to CFC regulation, including production bans, technology based standards, and SNURs.

/s/ Signed SEP 30 1980

Douglas Costle
Administrator

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July 24, 1981

AUG 4 1981

Parren J. Mitchell, Chairman
Subcommittee on Anti-Trust
Restraint of Trade Committee
on Small Business
House of Representatives
Washington, D. C. 20515

Dear Chairman Mitchell:

My name is S. Richard Nusbaum, president of Pennsylvania Engineering Co., Phila., Pa. I was asked to appear before your committee on July 15, 1981 regarding hearing on CFC's. Unfortunately, there was only a few days' notice and I had a previous business committment. I would like to put some facts before you on this very important subject. We are a small business, with less than 40 employees; we have been in business for 76 years. We manufacture Sterilizing Gas used extensively in the thousands of hospitals and industries sterilizing medical devices for hospitals. We developed the 12/88 formula (12% Ethylene Oxide and 88% CFC-12) for Government, Industry, and Hospitals in the United States, 23 years ago.

Although we pioneered the 12/88 (EO/CFC) mixture, our company is now one of a number of companies now producing it, but we are the only small business company doing so. Most of our industrial sterilizing customers are themselves small business companies. They too would be seriously affected by any restriction in the use of CFC's.

Over 7000 hospitals, including many hundreds of VA, Navy and Army Hospitals, use this efficient formula. It is used in over 95% of the U.S. hospitals and over 80% of the Medical Device and Pharmaceutical plants in the U.S. As a result of its use, Health Care in the U.S. has improved greatly over the past 20 years. One of the major reasons for this is the extensive use of the 12/88 Sterilizing Gas.

It has replaced flammable, explosive and high-pressure formulas that preceded it in hospitals. It has become the principal formula in the medical industry for sterilizing products for Hospitals and Doctors for the same reasons.

Many new materials such as pharmaceuticals, plastic, electrical and disposable devices can only be sterilized with this sterilizing gas using 88% CFC-12. Steam cannot be used for any of these heat or moisture-sensitive items. There are thousands of such different items in daily use in the U.S. Hospitals, other Health Care Facilities and Doctors' offices today.

Examples of these items sterilized and used each day are pacemakers, heart-lung surgery devices and equipment, catheters, scopes of all types, etc. Most of these can only be sterilized with EO and CFC-12; there are no substitute methods of sterilization for most of them. If CFC-12 production were restriced or banned, many of these life-saving and health preserving products would have to be withdrawn from the market. Health Care in the U.S. would be set back 50 years.

Since the advent of EO/CFC-12 Sterilizing gas 23 years ago, many treacherous diseases frequently spread in hospitals at that time, have been eliminated. These include infections such as staphylococcus, streptococcus and pneumococcus as well as others. The wide use of low pressure, efficient sterilizers that operate only on EO/CFC-12 mixture was the principal reason for the elimination of the spread of these infections in hospitals.

This 12/88 EO/CFC-12 formula is so effective because the 88% CFC-12 carries the EO and moisture (so essential to sterilization) through the sealed plastic outer wrap of packages. It then makes the device inside sterile; it can then be stored indefinitely in a sterile condition for use (still sterile) when needed in surgery.

Further, because of the molecular weight of 121 for CFC-12 and molecular weight of 44 for EO, the CFC carries minimum amounts of EO into the package. This substantially helps lower the levels of EO in the sterilizing areas. Further, the CFC-12, because of its low boiling point* helps the EO vaporize from the product being sterilized to quickly eliminate residuals from the sterilized products.

*(-20°F)

An eventual ban or large reduction in production of CFC's as proposed by EPA would have disastrous effect on the hospitals and Health Care in the U.S. because no substitute is available and the thousands of 12/88 sterilizers in use in hospitals and industry would be inoperable.

Even if a cap on production were put into effect the limited supplies would cause a large increase in the price of all CFC's. The hospital costs would soar even more at a time when containment of hospital costs is being pursued in all areas.

The cost of sterilization could easily increase over 300% with a limited production available and with Sterilizing Gas bidding against flexible foam, air conditioning, refrigeration and other essential uses. This would also cripple health care in the U.S.

EPA's ozone theory on CFC's is basically just that, a theory. There is no reasonable scientific data to substantiate it. The computer model calculations are inadequate and until basic scientific data is available the EPA should not be permitted to take steps to destroy so many essential industries in the U.S.

The first instance of the inadequate computer models on ozone depletion stated that if the theory were correct, there would be a 5% depletion of ozone over the past 8 years. The evidence is that the ozone increased 2½% over this period. It's just the reverse of the calculations.

The British Academy of Sciences have been checking readints all over the world for many years. They find as much as a 25% variation in the ozone level at any one given location over any 24 hour period. They will do nothing to change until more real data is available regarding the Ozone Theory.

Since the American computer models are not 3 dimensional, this large variation would preclude any accurate readings.

The scientific base is so new and inadequate that no meaningful data can be established for a long time.

It's pretty poor procedure to cut off the patient's head so his appendix won't burst, when there was nothing wrong with his appendix in the first place. This is what EPA is proposing with its Ozone legislation.

There are many essential uses for CFC's in the U.S. Many small and large businesses will be seriously affected by loss of jobs and production by any restriction on the use of CFC's.

The hospital, medical and pharmaceutical industries have these same problems as the CFC users, but even more, the life-saving and health protecting methods so effective in the U.S. today would be greatly affected by any CFC restrictions.

Best regards.

Sincerely,

S. Richard Nusbaum

S. RICHARD NUSBAUM

srn/drn

ALLIANCE FOR RESPONSIBLE CFC POLICY
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ROSSLYN, VIRGINIA 22209
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August 13, 1981

Honorable Thomas A. Luken
Chairman
Subcommittee on Antitrust and
Restraint of Trade Activities
Affecting Small Business
Committee on Small Business
U.S. House of Representatives
B-363 Rayburn House Office Building
Washington, D.C. 20515

Dear Congressman Luken:

On July 15, hearings were held before your Subcommittee on the effect of EPA's proposed regulation of chlorofluorocarbons (CFCs) on small business. At that hearing, a few questions were asked concerning the CFC/Ozone Depletion Theory. In response to those questions, the Alliance for Responsible CFC Policy is submitting the attached information. We respectfully request that this information be made part of the hearing record.

Sincerely,

Paul W. Halter

Paul W. Halter
Science Advisor

PWH:plt

Enclosures

CC: Honorable Dennis E. Eckart
Honorable Henry B. Gonzalez
Honorable Berkley Bedell
Honorable Lyle Williams
Honorable Hal Daub
Honorable Mark D. Siljander

CHLOROFLUOROCARBON/OZONE DEPLETION ISSUE
INFORMATION PAPER I - THE UNDERLYING SCIENCE

A. KEY FACTORS

- All ozone depletion numbers cited to date are uncertain calculations from unvalidated computer "models" - they are not measurements or observations.

- Analyses of actual measurements of ozone concentration show no ozone depletion to date; these analyses provide an early warning system.

- The most recent calculations of theoretical ozone depletion from CFCs are about 1/3 that calculated by the NAS in 1979; the rate of theoretical depletion also has been greatly reduced (See Table).

B. DEVELOPMENTS SINCE 1979 NAS REPORTS

- Sophisticated methods of statistical analysis (ozone trend analysis) have been developed and applied to the record of actual ozone measurements from the global network of ozone monitoring stations. Such methods screen out the natural variability in ozone to identify any underlying trend.

- Several independent groups have now made such ozone trend analyses. There is good agreement on the sensitivity of the method and on the apparent slight increase in ozone in the 1970's.

- Revisions in chemical reaction rates and atmospheric mixing rates used in the computer calculations have resulted in

significantly lower calculated theoretical future ozone depletion numbers and a much slower rate of any theoretical depletion.

- Further revisions in the model calculations are thought to be inevitable since simulations of the present atmosphere by the models still do not mesh with actual measurements at some altitudes for some species.

- Thus, model calculations remain highly uncertain. This uncertainty is now better recognized by scientists.

C. REGULATORY SIGNIFICANCE

- Because there has been no evidence of any developing problem, and the size of the theoretical problem and the rate of development of the theoretical problem have been revised downward, the risk, if any, in regulatory deferral to obtain better scientific information has been sharply reduced.

- Because ozone trend analysis permits the monitoring of actual ozone concentrations, independent of the computer model uncertainties, there is now available an early warning system. Thus, regulatory deferral can be undertaken with confidence that no undue risk will be incurred.

CHLOROFLUOROCARBON/OZONE DEPLETION ISSUE
INFORMATION PAPER II - POSSIBLE EFFECTS OF OZONE DEPLETION

A. KEY FACTORS

- The risk of any of the theorized effects developing is zero unless ozone depletion actually occurs.
- Ozone trend analysis is capable of identifying a sufficiently small ozone depletion trend that prompt action could keep any effects from ozone depletion to an insignificant level.
- The uncertainties surrounding the theorized effects of ozone depletion are even greater than the uncertainties in the underlying science of the theory.
- The theoretical effects of ozone depletion reported by NAS were based on an assumption of an eventual 16% or greater ozone depletion.

B. CITED EFFECTS (NAS)

- Increased skin cancer.
- Reduced crop productivity.
- Effects on larval forms of marine species.
- Climatic warming of a few tenths of a degree.

C. SKIN CANCER

- For most forms of malignant melanoma (the rare but often fatal skin cancer) medical data do not support a cause and effect relationship between melanoma incidence and repeated exposure to UV light. Projections based on a supposed relationship are likely invalid.

- While a relationship does exist between cumulative UV exposure and incidence of most but not all nonmelanoma (the common, rarely fatal, and successfully treatable form of skin cancer), present methods overestimate incidence from this cause.

D. CROP EFFECTS

- Estimates generally have been based on worst-case assumptions.

- Estimates have been based almost entirely on "growth chamber" studies, which are known to exaggerate the effects of changes in UV exposure. Growth chamber studies cannot be used to predict yields under field conditions.

- Field experiments on a number of crop species exhibit no detectable response to UV levels manyfold larger than would be experienced even with 16% depletion.

E. MARINE LIFE EFFECTS

- Estimates generally have been based on worst-case assumptions.

- Estimates generally have been based on laboratory studies in which are unable to realistically simulate several natural factors.

F. NATURAL VARIABILITY

- Natural variability in ozone over periods of 1-10 years (i.e., exceeding marine organism lifetimes) can exceed 5%. Observed changes in species populations are attributed to changes in food supply, predation, pollution, etc., but not to the changes in UV which result from natural ozone variations.

G. CLIMATIC EFFECTS

- The calculated theoretical warming effect due to CFCs is highly uncertain - the uncertainty is larger than the theorized effect itself.

- The calculated warming effect is only one-tenth of that calculated for increasing carbon dioxide.

- Statistical analysis of climatic records does not show the warming trend calculated to have occurred to date from carbon dioxide increases.

H. REGULATORY SIGNIFICANCE

- The theorized effects of ozone depletion generally have been exaggerated as they have been based on worst-case assumptions and often, very preliminary and highly uncertain experiments.

- The probability and magnitude of the theorized effects of ozone depletion are tied directly to the probability and magnitude of any theorized ozone depletion. As the later has been reduced, so should the former.

- Regulations based on the theorized effects of ozone depletion would be based on an even more uncertain scientific base than the highly uncertain underlying science of the thoery.

- There is no basis to anticipate any near-term serious risk. There is time to obtain the needed research.

CHLOROFLUOROCARBON/OZONE DEPLETION ISSUE
INFORMATION PAPER III - ALTERNATIVES TO CFCS

KEY FACTORS

- The question of availability of alternative products and processes to the current uses of CFCs must be examined separately for each major CFC use area because different uses have different requirements and use different CFCs.

- Generally, there are not suitable alternatives currently available for the major CFC uses. Alternatives which are available introduce significant safety, energy conservation, performance and economic penalties.

- The substitution of any alternative is a time-consuming process due to the need to test for worker and consumer safety and end-use performance, and to create the necessary production and service infrastructure.

- CFC producers have been searching for suitable alternatives since the inception of the ozone depletion theory. To date all promising candidates have one or more serious limitations, e.g., toxicity concerns or lack of a commerical manufacturing process. Work is continuing but the producers are not optimistic of a breakthrough in the near future.

AVAILABLE ALTERNATIVES BY MAJOR CFC USE AREAS

- Refrigeration and Air-Conditioning

  i. CFCs currently used: CFC-11, CFC-12, CFC-22

  ii. Non-CFC alternatives: Ammonia and hydrocarbons. Both are flammable; ammonia is also highly toxic.

Both must be excluded from occupied areas. Total redesign for safety and operability would be necessary and energy efficiency would be sharply lower.

iii. New CFC refrigerants are being examined but extensive research on effectiveness, toxicology and production processes is needed. In most cases extensive redesign of refrigerant equipment would be necessary. CFC-22 can replace CFC-12 in some applications but only with major redesign.[1]

iv. Other technologies (air-cycle, absorption, thermoelectric, steam jet, etc.) are so energy-inefficient that their use is limited to special applications.

- Blowing Agents

  i. CFCs currently used: CFC-11, CFC-12, CFC-114

  ii. Non-CFC alternatives:

     a. Insulating Foam ("closed-cell polyurethane"). There are no practical alternatives since the high insulating value is due to the trapped CFC in the foam. Competing products provide only about half the insulating value for the same thickness.

     b. Packaging, cushioning and miscellaneous foams. For some uses and to some extent, alternatives

[1] CFC-22, although involved in the ozone depletion controversy, has been considered as a potential replacement for CFC-12 in some applications because CFC-22 has only 1/28 the potential for theoretical ozone depletion as CFC-12.

such as methylene chloride and pentane can be substituted. However, in addition to the toxicological and flammability hazards introduced, product quality may also be lowered.

iii. New CFC blowing agents are being examined but extensive research on effectiveness, toxicology and production processes is needed.

- Cleaning Solvents for Critical Cleaning Applications

  i. CFCs currently used: CFC-11, CFC-113

  ii. Non-CFC alternatives include chlorocarbons and water. Substitution by chlorocarbon solvents would add health hazards and a performance penalty. Aqueous cleaners are prone to leave residues. Deterioration of cleaning performance, leading to reliability problems with critical components is a serious concern.

  iii. New CFC Solvents: There are no viable candidates.

- Liquid Food Freezant

  i. CFCs currently used: CFC-12

  ii. Non-CFC alternatives: Cryogenic freezing and air-blast freezing. Both have performance and economic deficiencies when applied to the difficult-to-freeze foods presently frozen in liquid CFC-12.

iii. New CFC freezants: None have been identified.

- Sterilant gas (Inerting Agent for Ethylene Oxide)

  i. CFCs currently used: CFC-12

  ii. Non-CFC alternative: Carbon dioxide. CO_2/EtO blends are high pressure, less effective and less reliable. Other sterilizing techniques (steam, radiation, etc.) can cause deterioration of critical components or materials and may also be less reliable.

REGULATORY SIGNIFICANCE

- The development of fully satisfactory alternatives has proven to be difficult and major obstacles remain. Regulation premised on "technology forcing" of CFC substitutes must be viewed as a long-short gamble at this time -- a gamble with great down-side risks.

- Any regulation to restrict the use of CFCs at this time will result in the use of inferior products or processes, with attendant increases in worker and consumer risk, energy use, product inefficiencies or failure and cost.

CHLOROFLUOROCARBON/OZONE DEPLETION ISSUE
INFORMATION PAPER IV -- OZONE TREND ANALYSIS

Introduction

Ozone trend analysis is a statistical analysis of actual measurements of ozone. It is used to detect any trend over time in atmospheric ozone concentration. The technique is sufficiently refined to permit detection of even a small trend in ozone concentration -- small in comparison to the natural variations in ozone concentration.

Briefly discussed below are the sources of the ozone measurements which are analyzed, a description of how the data are processed, the current results of the analyses, and the overall significance of the results of these analyses.

Ozone Measurements -- The Data Source

For over 20 years, ground-based weather stations around the world have been using an instrument, called a Dobson Spectrophotometer, to measure the total amount of atmospheric ozone over the stations. This instrument examines the spectrum of ultraviolet radiation from the sun which reaches the earth's surface. Since ozone in the atmosphere absorbs part of the ultraviolet radiation from the sun, the measurements of ultraviolet radiation can be used to determine the total amount of ozone over the stations.

These stations are scattered from 74°N to 54°S latitude -- latitude bands covering 88% of the earth's surface. Comparison of the ground-based ozone measurements with satellite measurements of ozone indicates that data from the ground-based stations are globally representative. To minimize errors, analysts exclude data from measuring stations with intermittent or short data records and from stations for which maintenance and calibration practices have been questionable.

Data Processing

The measurements show large variations in the amount of overhead ozone, reflecting the many natural influences which cause the amount of ozone to vary. For example, overhead ozone varies by season and in response to sun spot activity. In ozone trend analysis, statistical methods are used to filter out these natural cycles permitting the detection of any underlying trend. This statistical screening process is capable of detecting a trend which is small in comparison to known natural ozone concentration variations. (The processing of the ozone data is analagous to analyzing many measurements of the ocean's level -- measurements which will vary by tidal cycle -- to determine if there has been a change over time (trend) in mean sea level.)

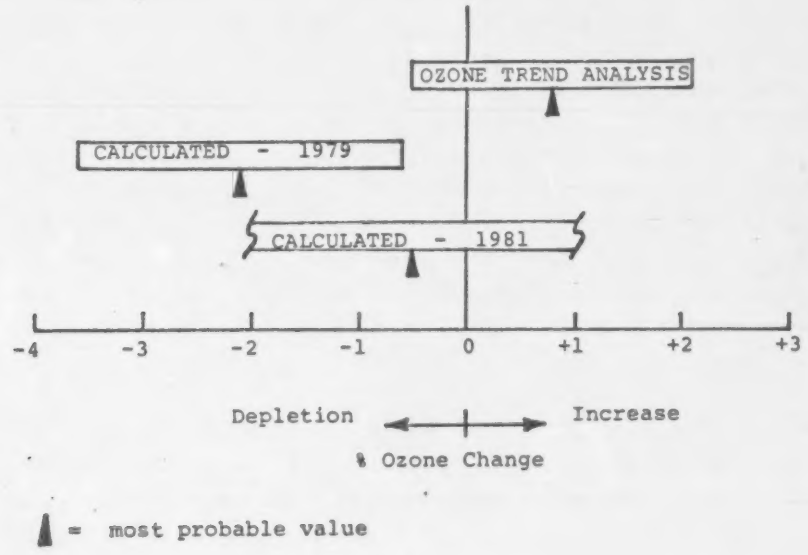
Current Results

Ozone trend analyses performed by several university and industry groups find the "most likely" trend in ozone concentration during the 1970's to be an increase of 0.8 percent. The calculated 95 percent confidence limits of this trend are ± 1.3 percent/decade. Thus, with 95% confidence, ozone concentration during the 1970's ranged between an increase of 2.1 percent (0.8 + 1.3) and a decrease of 0.5 percent (0.8 - 1.3), with an increase of 0.8 present being the most probable trend. This is shown by the top bar in Figure 1.

It is interesting to compare these results with the theoretical calculations based on the computer models used to simulate the atmosphere. In 1979, the models calculated that the theoretical change in ozone by the end of 1979 would be between a decrease of 0.6 percent and a decrease of 3.6 percent, with the most probable change being a decrease of 2.1 percent (see center bar, Figure 1). Obviously, these calculations are inconsistent with the analyses of actual ozone measurements.

Figure 1

COMPARISON OF OZONE TREND ANALYSIS RESULTS WITH MODEL CALCULATIONS



During 1980 and 1981, important revisions were made in the input data to the computer models used to calculate theoretical ozone depletion. These revisions have resulted in the calculated most probable ozone change to date being reduced from the 2.1 percent decrease calculated in 1979 to a current figure of 0.5 percent decrease. The 1981 calculations are shown by the bottom bar in Figure 1. (No estimate of the confidence limits surrounding the new calculation has yet been made). Thus, the updated calculations and the analysis of actual ozone measurements still disagree as to the most probable change in ozone but now do overlap at the extreme end of the range for the actual change in ozone.

Overall Significance

Ozone trend analyses indicate that ozone most likely increased in the 1970's rather than decreased as the computer models have calculated. However, the real value of ozone trend analysis lies not in validating or invalidating the theory or the computer calculations, but rather in its utilization as an early warning system -- a system capable of detecting a change in ozone concentration of 1.3 percent per decade from any cause. Thus, ozone trend analysis is sufficiently sensitive to detect any depletion in time to permit appropriate action well before significant risks would be incurred. And importantly, such measurements and analyses are totally independent of the assumptions and uncertain estimates which have to be made in order to perform the model calculations of theoretical ozone depletion.

The absence of any detectable problem to date, coupled with the availability of a sensitive early warning system, supports the position that further time should be taken to continue the research aimed at resolving the major uncertainties in the science of the ozone depletion theory. And since ozone trend analysis determines whether ozone depletion is actually occurring, results of the technique must be an important factor in any assessment of the need for, or the timing of, further regulation of CFCs.

Prepared Statement of Marshall J. Parker, Acting Chief Counsel for Advocacy, SBA

I am pleased to submit this statement on the merits of regulating emissions of chlorofluorocarbons (CFCs). As you know, the Office of Advocacy was established by Public Law 94-305 to articulate the needs and goals of small business. The Office of Advocacy is extremely concerned with the potentially severe impact on small business of proposed mandatory controls, production caps, or selective product bans on CFCs.

In 1974, scientists developed a theory predicting that the release of CFCs into the atmosphere would deplete stratospheric ozone which protects all forms of life from harmful ultraviolet radiation. Acting on this theory, the United States in 1978 banned the use of CFCs as propellants in virtually all aerosol products, thus eliminating about 50% of U.S. CFC emissions. CFCs are still used in a large number of nonaerosol applications in the U.S., including flexible and rigid foam manufacturing, industrial cleaning and drying, home and food store refrigeration, automobile air conditioning, and medical supply sterilization. The U.S. currently accounts for about one-third of world CFC production.

IMPACT ON SMALL BUSINESS

We are submitting testimony on behalf of the small businesses that comprise the vast majority of the 260,000 businesses who would be affected by this proposed regulation. For example, in the air conditioning and refrigeration industry, which employs 729,000 people and has annual revenues of over $26 billion, 98% of the

65,923 establishments are small businesses. All would be affected by regulations curtailing emissions, and many could be driven out of business. The Air Conditioning Contractors of America (formerly the National Environmental System Contractors Association) estimated in 1978 that emission control regulations involving recapture and disposal of used refrigerants would add $23,700 to the annual overhead of a service contractor, while the need to train 90,000 new service mechanics would boost the cost of an average service call from its current $30 to around $45.

An example of a potentially affected small business is Falcon Safety Products, Inc., a New Jersey firm employing 90 people, which manufactures personal safety protection equipment. This equipment includes fire and burglar alarms, boating safety horns, hospital dust removal products, and photographic dust removal products. All of these items are powered by CFCs. Since the manufacturer, distributor and marketer must realize a profit from the sale of CFCs, a regulation resulting in a 15% markup in the cost of CFCs would normally lead to a 50% increase in the cost of the finished product. This would destroy Falcon's sales, which are based on the annual use of 1-1.5 million pounds of CFCs.

Regulation of CFCs would very probably drive Falcon out of business. This business lacks the resources to develop suitable alternatives to CFCs, and regulation which restricts the supply of CFCs would boost prices to a level at which Falcon's products could no longer compete in the marketplace.

REGULATORY ACTION NOT WARRANTED

Contrary to the view expressed by the Environmental Protection Agency in its advance notice of proposed rulemaking, available scientific evidence does not demonstrate that immediate regulations are required. There is considerable doubt about the validity of this hypothesis and the National Academy of Sciences (NAS) model prediction that the ozone depletion to date would be 2%. No such depletion has been observed, although even a 1% decline would be detectable.

Two European reports seriously question the validity of the NAS model and its predictions. A European Economic Community Study states,

> The current situation is not a crisis that demands immediate action. Worldwide production of CFCs 11 and 12 continues the unabated decline which began in 1975... Furthermore, other changes now occurring in the atmosphere, such as the buildup of carbon dioxide, are predicted to offset substantially any effect predicted for the CFCs. It thus appears prudent to wait for further resolution of the scientific uncertainties before a decision about the necessity for additional regulations of CFCs is made.

The United Kingdom Secretary of State for the Environment has prepared a report expressing the view that additional scientific research should precede any regulatory requirements. Even under the NAS scenario, the long-term ozone depletion caused by a five-year delay in any restriction of U.S. production would amount to no more than 0.2% by the year 2010. This depletion level is roughly equal to the naturally occurring decrease in ozone concentration observed by moving 14 miles south in the United

States. Considering the magnitude of the potential economic harm of regulation, and the minimal predicted ozone depletion, waiting a few additional years to confirm the degree of the hazard is certainly justified. Furthermore, the NAS estimate of ozone depletion is almost certainly overstated, since it assumes an annual increase of 7% per year in the production of CFCs at a time when one or two percent is the more realistic estimate, according to a recent EPA letter. Therefore, the most responsible course is to pursue additional scientific research.

WORLD IMPACT OF U.S. ACTION

Recognizing that the U.S. accounts for only 33% of worldwide CFC production, even the EPA admits that U.S. action alone would not adequately address the CFC problem. Without international cooperation to reduce CFC emissions, any U.S. efforts would have little impact on the problem To date, other countries in the world have not found the CFC situation to warrant immediate action. Only three countries have restricted the use of CFCs and none contemplate any restrictions on nonaerosol uses.

From this, we draw two conclusions. First, it certainly would be more sensible for the world to eliminate nonessential aerosol uses, which account for 40% of the world's CFC production, before the U.S. considers regulation of CFC's nonaerosol uses. Second, the lack of international cooperation in controlling CFC emissions argues against additional unilateral regulatory action by the U.S.

In summary, we are very cognizant of the potential serious harm regulation on nonaerosol uses of CFC would have on small business. In light of this severe impact and the lack of need for immediate action, additional scientific research should precede regulatory action.

Prepared Statement of the National Automobile Dealers Association

The National Automobile Dealers Association (NADA) is a trade association representing over 20,000 franchised new car and truck dealers across the country. NADA members are engaged in retail sale of both new and used motor vehicles, including passenger cars, trucks, vans, and Jeep-type vehicles. In addition to retail sales of motor vehicles, NADA members are engaged in the repair and service of vehicles. Furthermore, NADA members are involved with the retail sale and service of both factory and dealer installed mobile air conditioning units.

Inasmuch as the overwhelming majority of the NADA members are "small business concerns," as defined by Section 3 of the Small Business Act and regulations of the Small Business Administration,[1/] NADA welcomes the opportunity to comment to the United States House of Representatives Committee on Small Business, Subcommittee on Antitrust and Restraint of Trade Activities Affecting Small Business, on the appropriateness of restricting the use of chlorofluorocarbons (CFCs).

Introduction

CFCs are stable, non-flammable and relatively non-toxic synthetic chemical compounds in the halogenated hydrocarbon family. Major non-aerosol uses of CFCs include its use as a refrigerant in mobile air conditioning (MAC) units and as the blowing agent

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1/ Codified as 13 CFR Part 121.

for open-cell flexible foams used in manufacturing automobile seat cushions. MAC units are currently one of the largest CFC-using product areas, and the major members of the MAC industry are the automobile manufacturers.[2/]

The MAC industry in the United States is large and well established. In 1980, nearly 77 percent of the passenger vehicles sold were equipped with MAC units.[3/] The essentiality of automotive air conditioning in contributing to the improved health and safety of automobile drivers is seen in its key role of reducing the debilitating effects of heat stress on human activity.

Driving under the heat stress conditions commonly experienced in many parts of the United States during the summer months has been shown to adversely affect driver alertness.[4/] A study of the effect of heat stress in driving performance conducted for the National Highway Traffic Safety Administration has concluded that suitable air conditioning equipment or other

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2/ CFC-12 is the refrigerant used in virtually all MAC units, such as in automobiles, trucks, and farm tractors.

3/ Ward's Automotive Yearbook, 1981, p. 102

4/ Lack of alertness has been ascribed as a key factor in many of the fatalities and disabling injuries experienced annually in traffic accidents in the United States. "Mobile Air Conditioning," White Paper: Chlorofluorocarbon/Ozone Depletion Issue, p. 1, report by DuPont de Nemours and Co. (Inc.), Wilmington, Delaware, August, 1979.

effective countermeasures should be available to drivers who will be exposed for extended periods of time to heat stress conditions.[5/] CFC air conditioning refrigerants are thus an important asset in current programs to increase passenger safety in transportation.

In light of the above, and for the reasons set forth below, NADA submits that the proposal by the Environmental Protection Agency[6/] (EPA) for restricting the production of CFCs should be withdrawn.

I. There is insufficient scientific evidence to support the hypothesis upon which EPA relies to regulate CFC use.

NADA submits that no regulation of CFC use is appropriate at this time because the ozone depletion hypothesis upon which EPA's regulatory initiative is premised remains unverified. EPA has by its own admission acknowledged that "the scientific models on which the theory is based have not been conclusively validated."[7/] The basis for the regulation is thus a sequence of possible events, yet to be verified, and an unverified theory that the release of CFCs into the atmosphere may eventually deplete the earth's ozone layer.

5/ Id. at 2.

6/ Published as an Advanced Notice of Proposed Rulemaking (ANPR) on October 7, 1980 (45 FR 66726).

7/ Page 2 of a letter from Steven D. Jellinek, Assistant Administrator for Pesticides and Toxic Substances for the EPA, to Herbert T. Gilkey, Deputy Director of Public Affairs, Regulation, Air Conditioning and Refrigeration Institute.

Predictions that CFCs deplete stratospheric ozone layers are based on computer models, rather than actual measurements of ozone atmospheric chemistry, and numerous discrepancies remain between what the computers assume and what actual measurements have shown.[8/] Models currently "calculate" that 1.8 percent depletion due to CFC releases should have occurred by 1979.[9/] Analyses of ozone measurements made to date, however, have shown no evidence of depletion or of abnormal global trends.[10/]

The discrepancies between the theory predictions and actual atmospheric measurements are so great that NADA opposes at this time any further regulation of CFCs. The EPA banned the use of CFC as an aerosol propellant on the basis of an unverified theory and now appears to be moving to regulate essential non-aerosol uses of CFCs in the same manner. NADA contends that the decision to initiate additional regulation of CFCs without conclusive experimental proof of the ozone depletion theory, and in the absence of scientific agreement on such a theory, presents an important question regarding the agency's authority.

8/ This problem may be due to the fact that the estimates are derived from many assumed parameter values that are very uncertain. For example, a sensitivity analysis performed by International Research and Technology Corporation suggest the total CFC emissions figure for 1976 could be as low as 46.7 million pounds or as high as 217.6 million pounds. Economic Implications of Regulating Chlorofluorocarbon Emissions from Nonaerosol Applications, R-2524-EPA, p. 131, June, 1980. Prepared for the EPA by the Rand Corporation.

9/ DuPont White Paper, Position Paper, supra note 4, at 30.

10/ The results are from ground-level monitoring stations worldwide and, since 1970, by satellite. Id. at 29.

NADA contends that the EPA should defer consideration of CFC regulations until completion of industry and government programs that are expected to clarify uncertainties in the ozone depletion theory. Most of the world's scientific community agree that there is no unreasonable risk to health and environment in awaiting verification of the extent and impact, if any, of ozone depletion.[11/] Scientific knowledge regarding CFCs and the ozone layer is rapidly evolving and, while such validation is not now technically feasible,[12/] new measurements and scientific developments provide the basis for great optimism that more will soon be known about this controversial subject.

NADA submits that the current uncertain status of the ozone depletion theory does not justify initiating extensive, costly, and disruptive regulatory proceedings when there is no risk in waiting to determine its validity. The issues raised concerning the role of CFCs are complex and subject to many uncertainties. The ozone depletion theory cannot be properly

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11/ A study group of the Royal Society (the British equivalent to the United States National Academy of Science) reported that "there is no need for hasty action." "Pollution in the Atomosphere," The Royal Society Study Group Report, p. 13, June, 1978.

12/ The EPA has stated that the ozone depletion theory has not yet been observationally validated and that such validation will not be technically feasible until mid-decade. Supra note 7.

addressed without an adequate opportunity to assemble scientific information which is currently unavailable. Without such information, it is impossible for NADA to justify the proposed production restriction on CFCs.

II. Ozone depletion is an international problem which cannot be unilaterally solved by the United States.

The production of CFCs is an international concern which requires assessment and resolution by all of the industrialized nations of the world. The curtailment of the use of CFCs in the United States would represent only a small percentage of world-wide emissions and would have only a marginal, if any, impact. No single nation accounts for a large enough portion of world CFC use or production to be able to unilaterally control ozone depletion.[13/] CFCs emissions around the world contribute equally to ozone depletion, and any damage caused by CFCs emissions will not be limited within the boundaries of the source country.

NADA submits that the United States has already set a worldwide example by banning the use of CFCs in aerosols, in

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13/ The EPA has recognized that ozone depletion is a truly international concern, and further, that unilateral United States' actions against CFCs would be fruitless. Id.

spite of the fact that other countries continue to use CFCs in aerosol production. It thus makes little sense for the United States to contemplate restricting critical non-aerosol uses of CFCs in the face of such findings.[14/] Regulation of non-aerosol applications of CFCs in the United States would be of little value and would reduce worldwide emissions by only a small fraction, if at all. As past experience has shown, any reductions or limitations would be negated by increased production in other parts of the world.

If the United States were to pursue a regulatory program while the rest of the world did not, the continued unregulated emissions abroad would limit the effects of the EPA proposal to a modest worldwide effect, with a hopelessly unfavorable balance between the costs and benefits to the United States.[15/] NADA submits that global CFC levels would, therefore, be affected minimally or not at all. There remains the need for international cooperation rather than further unilateral action by the United States if any such proposed regulation is to have a chance to be effective.

14/ A recent study has concluded that an international ban of CFCs remains unlikely: "Most likely, the U.S. will be in the position of trying to negotiate an international treaty (or its equivalent) regulating CFC emissions, comparable to the treaty prohibiting atmospheric testing of nuclear weapons. The analysis of benefits and costs, which shows a close balance . . . or a net benefit of continued emissions, and the uncertainty analysis just provided, falls short of providing a conclusive case to present to other governments in support of such a treaty or agreement." Bailey, Uncertainties and Benefit-Cost Analysis of CFC Control, p. 77, University of Maryland, Department of Economics, August, 1980.

15/ Id. at 3.

III. There are no practical alternatives to CFC refrigerants.

CFCs are considered highly desirable from a worker and consumer safety standpoint because they are stable, nontoxic, and nonflammable. There are no satisfactory alternatives meeting the necessary criteria of safety, energy efficiency, performance, and value in use; alternative substitutes appear to be toxic or flammable and unsatisfactory from both a health and economic perspective. NADA submits that EPA is focusing only on the possible risks of CFCs and is ignoring the above important benefits.

If the proposed regulations to limit the production of CFCs were adopted at this time, with no alternative refrigerants readily available, the growth of the refrigeration and air conditioning industries in this country would grind to a halt. To curtail the use of CFCs in such equipment is to curtail the use of such equipment itself. Such a situation would lead to the expensive process of retooling the current machinery and equipment for an alternative that either does not exist or has been shown to be more costly and less efficient.

If an alternative to CFCs is required in automotive air conditioning systems and seat foam manufacturing processes, General Motors would have to invest close to $1 billion for developing such alternate systems.[16/] General Motors estimates

16/ White Paper: Recommended Actions to Improve Cost/Effectiveness of Government Regulations, Section II, report by General Motors, June 9, 1980.

that, if an alternative refrigerant were selected now, it would take five to seven years to test, develop, and place into production a system that would be compatible with the new refrigerant; additionally, if General Motors were to change to an alternate blowing agent used in flexibile seat foams, the development time to place such a foam into production is currently estimated at between two to three years.[17/] NADA submits that, until a reasonable and feasible alternative exists, the costs of retooling are prohibitive and render the EPA proposal unconscionable.

The energy conservation advantages of CFCs, historically overshadowed by the better known advantages of engineering, processing, and safety, are gaining recognition as an essential factor in the importance of continued CFC use. Conversely, NADA contends that a ban or restriction on the use of CFCs would thus be considered as both an energy and economic penalty. The proposed ban would cause additional and serious aggravation of our current energy problems and be contrary to our Nation's economic and environmental policies.

17/ Id. Another example of the long lead times required for retooling when components are redesigned was given by Delco Air Conditioning, a division of General Motors. Delco has designed a small and light compressor which they have been phasing steadily into service; but they estimate that it will require approximately ten years for the complete phase-out of their older unit. Supra note 8 at 134.

The Battelle/Columbus Laboratories released a study concerning the problems of increased energy consumption and concluded that there is a significant energy penalty associated with a ban on CFCs. The results indicated that an outright ban in 1980 on the use of CFCs would have the cost equivalent of a net energy penalty of 9.5 billion gallons of fuel in the tenth year of the ban and a cumulative total of 49.8 billion gallons of fuel for the first decade following the ban.[18/] The energy penalties would result from using the "next best alternative" to CFCs which, for MAC units, has been shown to be the unsatisfactory substitutes of ammonia[19/] and CFC-22.[20/] NADA submits that, as the above study has indicated, the continued use of CFCs would result in large energy savings to our Nation, and any conversion to an alternative refrigerant at this time would penalize the Nation's diminishing energy supplies.

18/ Energy Consequences of Chlorofluorocarbon Regulation, p. 2, a report by Battelle/Columbus Laboratories. To put such figures in perspective, it should be noted that the 9 billion gallons of fuel calculated for the tenth year of a ban on CFCs is equivalent to the amount of fuel required to drive 12 million average cars (about 10 percent of all U.S. cars) for one year. Id. at 6.

19/ The study also noted the problems of ammonia's toxicity and flammability. Id. at 13.

20/ CFC-22 has been considered as an alternative refrigerant for use in automobile air conditioning primarily because it is mainly removed naturally in the lower atmosphere; however, it necessitates higher equipment operating pressures to achieve proper operation. To obtain these higher pressures, stronger and heavier equipment than what is currently used is needed for safety reasons. Since automobile manufacturers have identified weight reduction as an important means to help achieve mandated energy conservation goals by 1985, such weight increases to accommodate CFC-22 would result in increases in fuel waste. Supra note 4 at 2-3.

IV. Regulation of CFC use would have substantial adverse economic effects.

The major members of the MAC industry are the automobile manufacturers, and NADA submits that a reduction in the availability of CFC refrigerants would have an adverse economic impact upon this industry. The MAC industry is a major employer,[21] and the annual sales of original equipment alone exceed seven million units at a cost of over $2 billion.[22] On a larger scale, the importance of CFCs to the economy can be seen from the following statistics contained in a 1979 study on the ozone depletion issue.[23]

(1) Approximately $375 million worth of CFCs are sold annually.

(2) More than 650,000 jobs in the United States are related to CFC use.

(3) Approximately 240,000 domestic business locations are involved with the use of CFCs.

(4) Annual value of goods and services in the United States which depend to some extent upon CFCs exceed $17 billion.

21/ The factories that produce compressors, condensors, evaporators, and accumulators have sizable employment. General Motors alone employs about 13,200 workers in the production of MAC components. Supra note 8 at 113.

22/ Id.

23/ Supra note 4 at 16-17.

(5) Value of installed products in the United States which use CFCs is greater than $90 billion.

NADA contends that a regulation banning production of CFCs would thus have the effect of an economic sanction against the industrial base of the United States at a time when many vital sections of the economy, such as the steel and automobile industries, are experiencing both short-term and long-term decline in sales and employment.

The EPA's proposed institutional trading and permit structure for the use of CFCs also has the potential for dramatic market fluctuations that would drive up the price of CFCs to both users and consumers and adversely impact many small businesses. NADA submits that, as many of its dealer members are small businesses from the standpoint of CFC use, adverse economic and social consequences of any further regulation must be fully understood before such a proposal may be deemed appropriate. This is especially important at a time when depressed sales, coupled with unreasonably high interest rates, have led to a startling decline in the number of franchised dealerships to the lowest total since the infant days of the automotive industry.[24/]

24/ Automotive News, November 10, 1980, p. 42. The domestic dealership total declined by 1,643 in model year 1980, the worst downturn in 22 years. Calendar year 1980 registered a loss of 1,607 dealerships which appears even more disastrous when compared with a loss of only 96 dealerships in calendar year 1978. Automotive News, February 23, 1981, p. 1. The news continues to be discouraging as first quarter 1981 domestic dealership closings totaled 221, the second highest first quarter decline in the 20 years that Automotive News has been compiling census data on a quarterly basis. Automotive News, May 4, 1981, p. 1.

EPA is charged under both the Clean Air Act, 42 U.S.C. Sections 7457, 7617 and the Toxic Substances Control Act, 15 U.S.C. Section 2605, with the task of carefully assessing the economic consequences of any regulation which may reasonably be anticipated to affect ozone in the stratosphere. They are also required under each statute to take into account the impact of any proposed regulation upon small businesses. Further, the newly enacted Regulatory Flexibility Act (RFA), Pub. L. 96-354, directs the EPA to view small businesses involved with the regulatory process in light of their unique circumstances.[25/] The impact on small businesses of a proposed restriction of the use of CFCs should thus be determined before pursuing any regulatory scheme.

Conclusion

For the reasons set forth above, NADA submits that the proposed regulation restricting the production of CFCs should be withdrawn. The intention to limit the production of CFCs is based on an unverified theory which has not been accepted by the majority of the nations of the world. It also fails to take into account the severe hardships it would place upon the American public and small businesses which are dependent upon continued CFC availability. Any regulatory action at this time, without further economic and technological assessment, would lead to hardships for automobile

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25/ The enunciated purpose of the RFA, effective January 1, 1981, is to encourage adjustment of regulatory and informational requirements to the scale of the regulated entity, e.g., to minimize regulatory impact on small business and other small entities.

dealers; it would also lead to more costly and less satisfactory products for the consumer, adverse impacts on our Nation's energy supply, and the creation of hazards more significant and real than the theoretical problem such regulation seeks to avoid.

NADA welcomes the opportunity to comment on this matter.

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Prepared Statement of the NRDC Concerning the Impact of Policies To Protect the Ozone Layer on Small Business

On July 15, 1981, the Subcommittee on Antitrust and Restraint of Trade Activities Affecting Small Business of the House Committee on Small Business held a hearing on EPA's ozone protection policies and possible implications for small business. Because NRDC has worked for policies to protect the ozone layer for many years, and because certain misinformation and misleading statements were made by several witnesses, we are submitting tnis statement for the record.

NRDC's Efforts to Protect the Ozone Layer

The Natural Resources Defense Council is a national, non-profit conservation organization with more than 40,000 members in the U.S. and more than 20 other countries. NRDC recognizes the importance of global resources as well as domestic environmental problems, and for that reason we have worked for policies to protect the ozone layer for many years. We filed the initial petitions with the Food and Drug Administration and the Consumer Product Safety Commission which ultimately led to the ban on use of chlorofluorocarbons (CFCs) for aerosol sprays.

NRDC staff members serve on several relevant EPA Advisory Committees, on technical committees of the Organization for Economic Cooperation and Development (OECD), and on numerous professional bodies concerned with hazardous chemical control policies. NRDC's involvement in the CFC issue also reflects a

commitment to help resolve the difficult, complex policy issues inherent in chemical regulatory policy. With the assistance of several outside experts, we prepared a twelve-country comparative study of fluorocarbon regulation funded by the German Government. Conclusions were presented at an international meeting of governments on the CFC problem held in Munich in December 1978. NRDC was the only nongovernmental organization invited to participate, and the study was subsequently published as a book.

The Importance of Policies to Protect the Ozone Layer

While for jurisdictional reasons the hearing focused solely on the issue of potential small business impacts from restrictions on the availability of CFCs, industry testimony gave the impression that regulation would serve no useful purpose. No one is for needless regulation; the issue is whether the costs are worth the benefits.

As is true of many environmental problems, the costs are far easier to quantify than the benefits. This is particularly true of the CFC issue. We think we know the qualitative risks--increased skin cancer and diminished marine and agricultural productivity due to damaging ultraviolet radiation, and climatic changes due to perturbations of the upper atmosphere. These risks are described in the 1979 NAS report, and the 1980 United Nations Environment Program report, and an update by the National Academy of Sciences. What we cannot do is quantify the risks. Nor will be able to do so until substantial injury will already have occurred. However, this does not make the threat any less real or less a matter for concern.

The Status of EPA's Consideration of Regulations to Protect the Ozone Layer

Several of the witnesses referred to EPA's "proposed regulations," implying that a proposed rule had been promulgated. This is simply untrue. EPA issued an "Advance Notice of Proposed Rulemaking" asking for comments on possible regulatory proposals. As the Notice stated, "EPA solicits comments on the appropriateness of restricting the use of CFCs and on the feasibility of implementing the Mandatory Controls and Economics Incentives Approaches". (45 Federal Register 66726, October 7, 1980)(emphasis added) This was a commendable effort to obtain industry and public comment in advance of an agency decision to regulate, much less a commitment to any specific form of regulation. Instead of receiving praise for seeking public comment, the Notice has been characterized incorrectly as a regulatory proposal and made the target of an industry onslaught unprecedented since the Allies invaded Normandy.

Many small businesses are clearly so terrified of the possibility of regulation that they do not care about the legal distinction between a proposed regulation and an advance notice of proposed rulemaking. Larger firms have no such excuse. The unfortunate result is likely to be a reluctance on the part of agencies to be so open in the future. The lesson is clear--working with industry doesn't mean industry will work with you. More fundamentally, issuance of an advance notice provides much less basis for Congressional action. Whereas industry contends

their concerns have been unfairly treated at EPA, the truth is that the Agency has gone out of its way to listen to industry.

The Impact of Ozone Regulation on Small Business and the Economy

Every industry witness discussed only the consequences of a production cap, as if that was the only possible form of regulation. In fact, as the RAND Corporation studies and ANPR make clear, there are many alternatives under consideration. To note simply one example, the United States could adopt a ban on new production capacity similar to the policy adopted in the European Economic Community and recently in Japan. Technology based controls could also be adopted to require the use of alternatives and recycling measures on an industry by industry basis, much like in other areas of pollution control. EPA, as stated above, has absolutely no commitment to a production cap, and any more workable approach should and will be considered.

At the same time, industry witnesses were less than objective in their assessment of a production cap. They assumed the absolute worst possible scenario, including no effort to assure that small businesses would have fair access to the available supply. The results may be dramatic but they are not particularly relevant. The purpose of seeking industry comment is to allow modification of regulatory proposals to prevent undesirable consequences. Small business impacts are discussed in the RAND report and are being considered by EPA. If the industry was truly concerned about the plight of small business, it would propose means by which a production cap could be modified to

address small business needs. However, rather than attempt to offer constructive criticism, industry chooses simply to condemn the concept in its entirety.

The irony of this situation is that a marketable permit approach was investigated and presented in the ANPR specifically for its economic benefits. The RAND study documents, on an industry by industry basis, the substantial savings achievable from the adoption of an economic incentives approach as opposed to more traditional forms of regulation. Again, rather than encourage and contribute to the evolution of a promising alternative to bans or technology based controls, industry has chosen obstructionist tactics.

Conclusion

Protection of the ozone layer raises important policy concerns. However, one sided discussion focused solely on the viewpoints of the affected industry does very little to advance public debate. Any future hearings should include representation of other points of view.

Prepared Statement of the Sheet Metal and Air-Conditioning Contractors' National Association

SMACNA Standard on CFC to
Small Business Subcommittee
July 15, 1981

The Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) offers the following statement to the Subcommittee on Antitrust and Restraint Activities Affecting Small Business in connection with its inquiry and hearing on the potential effects of U.S. Environmental Protection Agency (EPA) regulations on the production and use of chlorofluorocarbon (CFC) compounds. SMACNA is particularly concerned with the impact of possible EPA regulations on the supply and availability of CFC refrigerants.

In an Advanced Notice of Proposed Rulemaking published October 7, 1980, EPA discussed several control strategies. It appeared to favor a new and untried economic control plan. This plan would limit the production of CFCs, and would allow only those who had purchased use permits at auction to obtain CFCs from chemical manufacturers. The following SMACNA comments are in response to this type of regulatory scheme.

The members of the Sheet Metal and Air Conditioning Contractors' National Association erect and install sheet metal and other types of ducts which are components of heating, air conditioning, ventilating, and air pollution control systems used in commercial, industrial, or residential structures. In addition many SMACNA members install the air conditioning, heating, and air-moving equipment which is also used in such systems. The 2,700 SMACNA members have a gross business volume of $6 billion and employ approximately 50,000 sheet metal mechanics. The average gross income of SMACNA members, according to a recent survey, is about $3 million.

Summary

- SMACNA believes that any restriction on the production or use of CFC refrigerants would have serious, adverse effects upon its member contractors and upon society in general, and that neither EPA nor its contractors have adequately analyzed the impacts of the contemplated regulatory actions;

- SMACNA disagrees with the EPA assumption that scientific evidence supports a conclusion that chlorofluorocarbons (CFCs) are depleting or are likely to deplete the stratospheric ozone layer;

- SMACNA urges EPA to continue to monitor the ozone layer so that appropriate action can be taken if a need is shown at some time in the future;

- As a result of these and other considerations, the SMACNA Board of Directors opposes the implementation of any federal regulation to limit, reduce, or otherwise restrict the production of chlorofluorocarbons or their use by air conditioning and refrigeration contractors.

The Association and the Contracting Industry

The business establishments of most SMACNA members would be within the Standard Industrial Classification 1711 "Plumbing, Heating (Except Electric), and Air Conditioning Special Trade Contractors," as defined by the U.S. Department of Commerce, Bureau of Census. Also within SIC 1711 are contractors who install and repair refrigeration and ventilating equipment and systems in all types of structures. The industry, as defined by Census, includes some speciality contractors who do not work with air conditioning or refrigeration equipment or systems.

The Bureau of the Census reports that, during 1977, there were 56,435 business establishments classified within SIC 1711. The total employment by these contractors was 458,667. All business receipts of these establishments amounted to $21.4 billion, and the value added through the work of these contractors was $10.7 billion in that year. It is estimated that approximately one half the total industry receipts and value added are the direct results of work done to design, install, repair, and service air conditioning and refrigeration systems which require the use of chlorofluorocarbon refrigerants. It is estimated that approximately 80 percent of the contractors in SIC 1711 derived at least part of their income from such work.

Most of these contractors operate small businesses. For example, fewer than ten people were employed in 44,807 of the 56,435 establishments. The remaining establishments, those with ten or more employees, accounted for 73 percent of the industry's receipts. Although large in this industry segment, these establishments are relatively small businesses within all of U.S. industry, for only 432 establishments reported gross business receipts of $5 million or more. (The small business size standard for SIC 1711 is $5 million for loans and procurement.)

Refrigerant Use by Contractors

The CFC refrigerants necessary to operate the systems installed by contractors within SIC 1711 are supplied in any of three ways. The equipment may be fully charged with CFC refrigerant by the equipment manufacturer at the time it leaves the factory. Much single-package equipment is shipped fully charged by the equipment manufacturer. Such equipment may be a single-package air conditioner or heat pump used in a residential or commercial installation or roof-mounted equipment installed on a shopping center, supermarket, etc. Some single-packaged chillers would also be fully charged by the equipment manufacturer.

Equipment may be sealed and shipped containing only a small "holding" charge of CFC refrigerant. Much split-system residential air conditioning equipment is delivered to the contractor in this way. The contractor then purchases CFC refrigerant from a refrigeration or air conditioning wholesaler. Typically, the contractor purchases only enough CFC refrigerant to satisfy his immediate needs and he maintains only enough inventory that new tanks of refrigerant can be provided to the installation and service mechanics he employs. (In connection with this, it should be pointed out that there are approximately 5,500 air conditioning and refrigeration wholesaler establishments in the U.S.)

The very largest types of equipment, such as centrifugal liquid chillers, are usually shipped with a small holding charge. After equipment installation, the CFC may be provided on order of the equipment manufacturer for installation by personnel trained to charge, start up, and check the operation of systems containing centrifugal or other large-tonnage refrigeration compressors. These individuals may be employees of the equipment manufacturer or of the installating contractor.

Most CFC refrigerant used in the service and repair of air conditioning and refrigeration equipment is obtained from a wholesaler by the servicing contractor. Typically these contractors do not maintain large inventories of refrigerants; rather they purchase refrigerant as needed, usually in containers of 25 to 50 pounds.

There are no known substitutes for CFC refrigerants, and equipment designed to use one refrigerant cannot function using other refrigerants. If CFC refrigerants were to become unavailable, existing equipment and systems could not be made to function if refrigerant had been lost.

Effects of Regulation

EPA has announced its intention to reduce CFC emissions by limiting production of the materials. EPA recognizes that any such action would disrupt the normal flow of CFC to users, but suggests that price increases resulting from the EPA-imposed scarcity would cause marginal users to change to other compounds which would be of nearly equal utility and available at a lower cost.

This might occur in some cases, but availability, rather than cost, is of greatest concern to members of SMACNA, as well as to other air conditioning and refrigeration contractors. Although any refrigerant price increase would affect system cost, and would necessarily be reflected in system installation or repair costs, the price of CFC refrigerant is but a small part of the total cost of installing or repairing air conditioning or refrigeration equipment. Increased refrigerant cost would be a nuisance to contractors and a burden to their customers, but that burden would be relatively small in most cases.

If, however, CFC refrigerant were unavailable, major problems would develop immediately. New systems could not be placed in operation, and existing systems, in need of repair, could not be made to function. Office buildings would become uninhabitable, perishable foods and medicines would be rendered unfit for use and would have to be destroyed, computer systems would be shut down or damaged as components overheated, vital functions of hospitals could not be maintained or performed, sensitive control systems in business and industry would fail -- all depending on which systems would fail during a period of CFC refrigerant scarcity.

In the ANPR, EPA has not addressed the problem of assuring adequate CFC refrigerant supplies to permit the continued operation of existing air conditioning and refrigeration systems. It has not suggested how CFC

refrigerant would be made available for use in new or replacement equipment or systems. Before undertaking any regulation of CFCs, therefore, it is apparent that EPA should determine how supplies of all CFC refrigerants - 11, 12, 22, 113, 114, 500, 502, etc. - will be provided to 5,500 wholesalers for use by 45,000 or more contractors.

In none of its discussion of regulatory options does EPA suggest how the smaller user, the user at the far end of the distribution chain, will be assured even a so-called "proportionate" share of available CFCs. The small user (the contractor) and the small supplier (the wholesaler) would almost immediately feel the effects of any restriction in CFC availability. The effect would be rapidly amplified, for, as refrigerant became more scarce, equipment manufacturers would ship their product with only a small holding charge. This would create even greater demand for the already restricted supplies of refrigerants available to contractors through wholesalers.

One regulatory scheme being considered by EPA would contain two essential elements. The first would be an annual CFC production limit. The second would be an auction of use permits, with each potential user presumably bidding for enough permits to satisfy his CFC requirement for the year. The permits would be transferable.

All users would be eligible to participate in the auction. On the surface this sounds fair to all, but, in reality, the small user -- the contractor -- would be unlikely to compete effectively against large users. Furthermore, the EPA scheme does not address the issue of providing small suppliers -- air conditioning and refrigeration wholesalers -- with CFCs for sale to those users who have use permits.

These concerns are shared by other users of CFC refrigerants. At a January, 1981 seminar conducted as a part of the Semiannual Meeting of the American Society of Heating, Refrigerating, and Air Conditioning Engineers, Mr. E. Douglas Kenna, then President of Carrier Corporation, stated:

> "The fact is that 70% of the 760,000 employees in the air conditioning and refrigeration industry are participants in small business. It is the small businessman who sells and services these devices who will be hurt the most.
>
> You have heard that one of the control strategies being considered is the auction of CFC use permits. I think such auctions would have little effect on the Carriers and General Electrics of this industry. We have the resources to obtain the CFCs we need, although increased costs would probably be passed along to the consumer.
>
> But in competition against us, the small businessman would have little chance of securing the refrigerant needed to continue his business.
>
> We operate service businesses and consider service to be an important part of our earnings structure. But there is plenty of room in the industry for the small air conditioning serviceman and contractor. As these regulations are envisioned, the small businessman would have few options if faced with a cutoff of CFCs."

SMACNA believes that any restriction on the production or use of CFC refrigerants would have serious, adverse effects upon its member contractors, air conditioning and refrigeration contractors in general, and upon all of society. We believe that many contractors would be unable to remain in the business of repairing or servicing air conditioning and refrigeration equipment, and that a substantial number of these would be forced out of business.

It appears to SMACNA that EPA has not adequately studied or attempted to assess the dire economic consequences and societal impacts that any production limitation would bring about. No CFC refrigerant user, no person who relies on CFC refrigerant to preserve food, to permit a business to operate, to maintain health, to prevent illness or for any other purpose, can thoughtfully accept either a production cap or a reduction in CFC availability.

Science

Although stratospheric ozone concentrations have been monitored since the 1930's, atmospheric scientists have kept especially careful watch on the ozone layer to determine if and to what extent its density is being diminished. During the seven years since the ozone-depletion hypothesis was proposed much has been learned about the constituents and the chemistry of the upper troposphere and the stratosphere, and many theories have been advanced on how CFCs or other compounds may react to diminish or enhance the ozone layer. There have been balloon shots, and airplane flights, and rocket launches. Extremely sophisticated instrument packages have been developed and used, but, through it all, one great truth remains -- there is no firm evidence that ozone depletion is occurring or that the presence of CFCs or any other substance in the stratosphere is having any adverse effect upon the ozone layer.

There is, we understand, controversy about the ozone depletion hypothesis within the scientific community. Some scientists state their belief that the hypothesis is valid and that ozone depletion must be occurring. Others, equally knowledgeable and competant, disagree and point to a growing body of scientific evidence that does not support the hypothesis. Both groups express carefully considered opinion; neither group has either scientific proof or evidence so overwhelming or persuasive that little or no reason for doubt remains. The issue is not settled.

It is impossible, in either science or philosophy, to prove a negative, to prove that something cannot or will not happen. Science can only show what can or will happen under a given set of conditions. Such a showing has not been made with respect to ozone depletion by cholorofluorocarbons, and SMACNA therefore believes that EPA has neither reason nor justification to support a conclusion that CFCs do or are likely to deplete the stratospheric ozone layer.

SMACNA also objects to the use of the phrase "ozone-depleting chlorofluorocarbons" in the title and within the body of the ANPR. The use of this phrase suggests that EPA has already concluded there is a need

for regulation because ozone depletion is occurring. If, indeed, this is the EPA position, that position should be changed so that the Agency can get on about the business of seeking the truth, the facts of the situation. It is important, we believe, that EPA continue to monitor the ozone layer so that appropriate action can be taken if a need is shown at some time in the future.

Conclusion

EPA has shown no need to regulate either the production or use of CFCs as refrigerants or in any other use. The Agency has not shown that the ozone layer in the stratosphere is being depleted by any mechanism, much less by the introduction of CFCs into the stratosphere. EPA should not, therefore, regulate or restrict the use of any of the CFC compounds.

The regulatory options being considered by EPA are untried and poorly thought out. The use of any of them would be disasterous to all CFC-using and producing industry, and to society at large. The probable impacts of such actions have not been adequately examined, and bland EPA assurances that all will be well are totally unrealistic and unacceptable.

Both the installing and servicing contractors and the users of air conditioning and refrigeration equipment and systems would pay a heavy price if EPA were to institute regulations restricting the production or use of CFC refrigerants. Contractors would be out of business, and their customers, the users of the systems, would find themselves without the vital services the systems provide. The public health and welfare would be seriously impaired.

For these reasons, the SMACNA Board of Directors opposes the implementation of any federal regulation designed to limit, reduce or otherwise restrict the production of chlorofluorocarbons or their use by air conditioning and refrigeration contractors.

Mr. LUKEN. The hearing is now adjourned.

[Whereupon, at 3 p.m., the subcommittee adjourned, to reconvene subject to call of the Chair.]

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